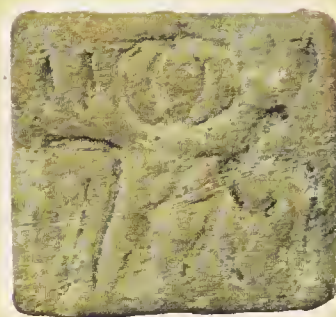


**EXCAVATIONS AT  
TARKHANEWALA-DERA & CHAK 86  
(2003-2004)**



**Pramod Kumar Trivedi**











MEMOIRS OF THE  
ARCHAEOLOGICAL SURVEY OF INDIA  
No. 99

EXCAVATIONS AT  
**TARKHANEWALA-DERA**  
**AND CHAK 86**  
(2003-2004)

**P.K. TRIVEDI**

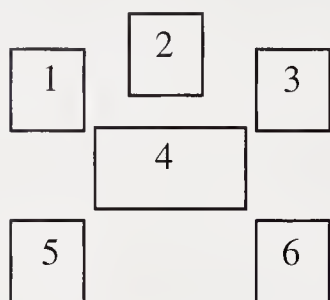


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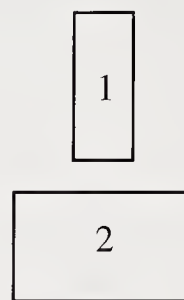
2009

*Front Cover Photo*



- 1-3. Harappan Seals  
4. Structure 4 (potter's kiln)  
5. Terracotta lump bearing impression of Harappan seal  
6. Fragment of a storage - jar bearing pre-firing graffiti

*Back Cover Photo*



1. Harappan Human Figurine  
2. Painted Grey Ware, Bowl

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2009

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# FOREWORD

In 2003-04 the Ministry of Culture, Government of India launched "Sarasvati Heritage Project" and identified sites *viz.* Tarkhanewala-Dera, Chak 86 and Baror in Rajasthan; Adi Badri, Hansi and Bhirrana in Haryana and Junikuran in Gujarat located along the palaeochannels of the River Sarasvati for large-scale excavations by Archaeological Survey of India. Tarkhenewala-Dera and Chak 86 in District Ganganagar, Rajasthan were excavated by the Excavation Branch-IV, Bhubaneswar, of the Survey established two separate and isolated cultural settlements *viz.* Mature Harappan and Painted Grey Ware respectively. This work by Shri P.K. Trivedi and his team is likely to be followed by other reports taken up under this programme.

I take this opportunity to express my gratitude to all others associated with the production of this report especially Dr. R.S. Fonia, Director (Publication); Dr. Arundhati Banerji, Superintending Archaeologist (Publication); Shri Hoshiar Singh, Production Officer (Publication); Dr. Piyush Bhatt and Miss Tajinder Kaur, Assistant Archaeologists (Publication). M/S Aravali Printers & Publishers Pvt. Ltd. deserves appreciation for publishing this volume.


New Delhi

20.03.2009



(K.N. Srivastava)

Director General



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# PREFACE

During the early twentieth century the area down the Ghaggar to Anupgarh was explored by an Italian scholar, L.P. Tessitori, who is said to have picked up a stone blade from the ancient mound at Baror (spelt by him as *Varoavali theri*) situated 12 km south of Tarkhanewala-Dera and Chak 86. Recently excavated site of Baror has yielded the remains of Early and Mature Harappan cultures. Tessitori who was on the mission of compilation of bardic tradition and a list of archaeological remains in Bikaner area visited Kalibangan (1917,1918) twice but could not identify it as a Harappan site. It is only in 1921 (Harappa) and 1922 (Mohenjo-daro) the great Indus civilization was recognized. Subsequently, in 1940-41 Sir Marc Aurel Stein who was associated with the Survey, took up exploration of Bikaner and Bahawalpur (Pakistan) regions along the dried up course of Ghaggar but failed to locate any protohistoric site in Bikaner division. In 1950-53 Shri A.Ghosh resurveyed the area and palaeo-channels of River Sarasvati (known as Hakra in Pakistan) and discovered many Harappan, PGW and early historic sites including Tarkhanewala-Dera and Chak 86. The material culture associated with this river (now known as Ghaggar), suggests that the river was rejuvenated at least three times, i.e., in and around 800-1000 BC as indicated by PGW settlements and again during the Christian era as testified by Rangmahal sites. Ghosh had taken up sondages at Tarkhanewala-Dera and Chak 86, respectively unveiling the remains of Mature Harappan and Painted Grey Ware cultures. The present field-work was taken up on a large scale under 'Sarasvati Heritage Project' at the instance of the Director General, Archaeological Survey of India, New Delhi. These excavations commenced in February, 2004 and continued upto May, 2004.

Bhubaneswar

April 12,2006

P.K.Trivedi





# ACKNOWLEDGEMENTS

During the financial year 2003-2004 the present excavator had to take up large scale excavations at Udayagiri, Barabati Fort (both in Orissa), Ayodhya (U.P.) and Tarkhanewala-Dera and Chak 86 in Bikaner division of Rajasthan. In this period no other officer was posted in this Branch and one Assistant Archaeologist Shri G.L. Katade was transferred to Nagpur in the midst of the excavation. Notwithstanding this a preliminary report on the excavation at Tarkhanewala-Dera and Chak 86 was published in *Puratattva*, no.34 in December, 2004 itself but the excavated material could not be completely analyzed. As per the advice of the then Director General, instead of taking up any other site, the work of preparation of detailed report was taken up. Shri R.K. Sharma, the then Joint Director General was kind enough to spare the services of Dr. J.K. Patnaik, Assistant Superintending Archaeologist, promoted to join Konark Museum, Konark as he was the only archaeologist left nearby, associated with these excavations. Shri K.N. Srivastava, Director General has taken warm interest in the publishing of this work. For this report drawings were prepared by Sarvashri S.K. Dey, and B.B. Badamali and photographs by R.N. Sahoo. Shri S.K. Bhoi and B.K. Das assisted in running the camp. The manuscript was typed by Shri S.K. Mishra, Stenographer and Shri A.K. Sasmal, L.D.C. Sarvashri Sarat, Bansidhar, Bibek and Bahadur looked after me during my frequent illness. They deserve my thanks.



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# INTRODUCTION

## 1. THE SITE AND ENVIRONS

Tarkhanewala-Dera and Chak 86 (Lat 29° 14' N, Long 73° 14' E) are two separate ancient mounds located in the dried up bed of River Sarasvati in Anupgarh tehsil District Ganganagar in Bikaner division of Rajasthan. Both these centrally protected sites are situated at a distance of about 6 km north of Anupgarh on the State Highway No.3 leading to Ganganagar. Both these settlements are at a distance of 250 m in the same locality. The marginal ridges of accumulated sand seem to represent the ancient river-banks as indicated by the occurrence of freshwater shells which got deposited on the banks of the river when it was alive. The area is ill watered and sandy but becomes a vast green pasture land covered with rich succulent grasses during the rains. There are no high ridges in the neighbouring area. The soil is clayey loam to hard clay that has the quality of moisture retaining particularly suited for cultivation. The ancient flood plains of the Sarasvati contain remarkably high density of protohistoric and

early historic settlements. The archaeologists and environmental scientists have advanced various theories about the conspicuous changes responsible for wet or dry climatic conditions leading to origin, development, desertion and reoccupation of cultures in the area in different periods.<sup>1</sup>

## 2. PREVIOUS WORK

A part of the Sarasvati valley in Bikaner Division as well as Bahawalpur area (Pakistan) had already been surveyed by Sir Marc Aurel Stein in 1940-41.<sup>2</sup> But because of his inference 'that there are no 'prehistoric' mounds east of Fort Abbas in Bahawalpur state with pottery of chalcolithic period' by which he no doubt meant the period represented at Harappa and Mohenjodaro. A. Ghosh of the Archaeological Survey of India took up further explorations in this area in 1950-53. As a result, in addition to several protohistoric and early historic sites, he also located two sites under reference, situated close by but separated by a canal and a road. Ghosh

<sup>1</sup> For various views see G. Singh, 'Indus Valley Culture (Seen in the Context of Post-Glacial Climate and Ecological studies in North-West India), *Archaeology and Physical Anthropology in Oceania*, Vol.6, No.2, 1971, pp. 177- 189; G. Singh, R.D. Joshi, S.K. Chopra and A.B. Singh, 'Late Quaternary History of Vegetation and Climate of the Rajasthan Desert, India; *Philosophical Transactions of the Royal Society of London* (Biological Sciences), 267 (889), 1974, pp. 467-501; V.N. Mishra, 'Climate, a Factor in the Rise and Fall of the Indus Civilization — Evidence from Rajasthan and Beyond', *Frontiers of the Indus Civilization* (ed.), B.B. Lal and S.P. Gupta (New Delhi, 1984), pp. 461-489; and Yash Pal, Baldev Sahai, R.K. Sood and D.P. Agrawal, 'Remote Sensing of the 'Lost' Sarasvati River' in *op.cit.*, pp. 491-497.

<sup>2</sup> Marc Aurel Stein, *An Archaeological Tour along the Ghaggar-Hakra River* (ed.) S.P. Gupta (Meerut, 1989), pp. 1-97. Also see, Nayanjot Lahiri, *Finding Forgotten Cities: How the Indus Civilization was Discovered* (Delhi, 2005) pp. 145-147.





*A. Ghosh*



*Sir Marc Aurel Stein*



took up a few small exploratory trenches to ascertain the nature of their deposits. Tarkhanewala-Dera yielded remains of mature Harappan settlement and Chak 86 brought to light relics of the Painted Grey Ware using people. In this particular area, both the cultures never came in contact with each other; nay each settlement originated and died out in its own time, entirely independent of each other.<sup>1</sup> During the excavations conducted by A. Ghosh at Tarkhanewala-Dera “A made-up platform, on which stood a modest Harappan settlement, was noticed, by excavation, and oblong standing cremation-ground marked off by flatly-laid mud-bricks, in which there had been at least five cremations (Pl. I). After each cremation, marked by ashes and bits of charred bone (sometimes collected in pots), the ground or mud-bricks within the enclosure wall was levelled by a coating of clay or mud-bricks for the next cremation to take place. That the Harappans cremated at least five of their dead at this place seems established; but the conclusion that

extended inhumation was the normal practice of the Harappans need not be prejudiced by this single isolated instance”.<sup>2</sup>

Because of a large brick kiln, sandy deposit, State Highway No.3 and cultivation of crops the dimension of the ancient settlement of Tarkhanewala-Dera could not be ascertained. The old people of the neighborhood, however, informed that local farmers have reduced it from 4.0 m to the present level for cultivation purpose.

### 3. PRESENT FIELD WORK

The excavations were taken up with a view to ascertain the cultural sequence of the above two sites and establish relationship with the neighbouring sites located in the ancient dried up course of River Sarasvati by the Excavation Branch-IV, Bhubaneswar, under the direction of P.K.Trivedi, assisted by J.K.Patnaik, P.K.Dikhit, G.L.Katade, S.K.Dey, B.B.Badamali, S.K.Khuntia, R.N.Sahoo, S.K.Bhoi, S.K.Mishra, B.K.Das and A.K.Sasmal.

---

<sup>1</sup> A. Ghosh, 'The Rajputana Desert — Its Archaeological Aspect,' *Bulletin of the National Institute of Sciences in India*, 1, 1952, pp. 37-42

<sup>2</sup> A. Ghosh, 'The Archaeological Background', *Human Skeletal Remains from Harappa*, Memoir No. 9, Anthropological Survey of India, with a foreword by Nirmal Kumar Bose (Calcutta, 1962), pp. 3-4. While sifting through the field notes of A. Ghosh, Jagat Pati Joshi, former Director General has recently noticed that remains of a furnace were also found. I am grateful to him for this information.





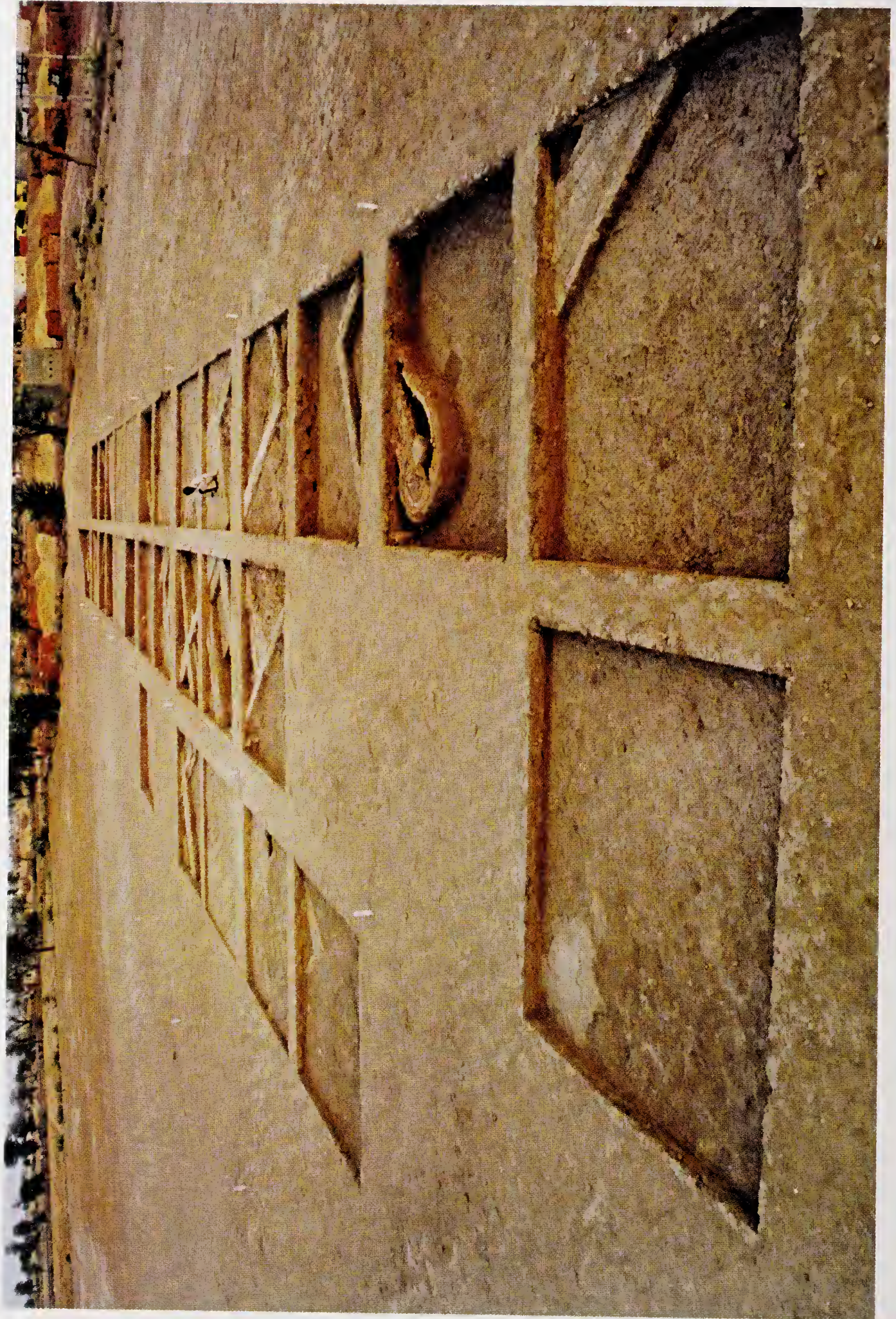
Pl. I. Tarkhanewala-Dera : Cremation ground, Harappan period (After A. Ghosh). See p. 3





Pl. II. Tarkhanewala-Dera : A view. See p. 17





*Pl. III. Tarkhanewala-Dera : Excavated trenches. See p. 17*



TARKHANEWALA-DERA, (2003-2004)  
DISTRICT GANGANAGAR, RAJASTHAN  
CONTOUR AND SITE PLAN

Scale 0M 2 6 10M 50M 100M

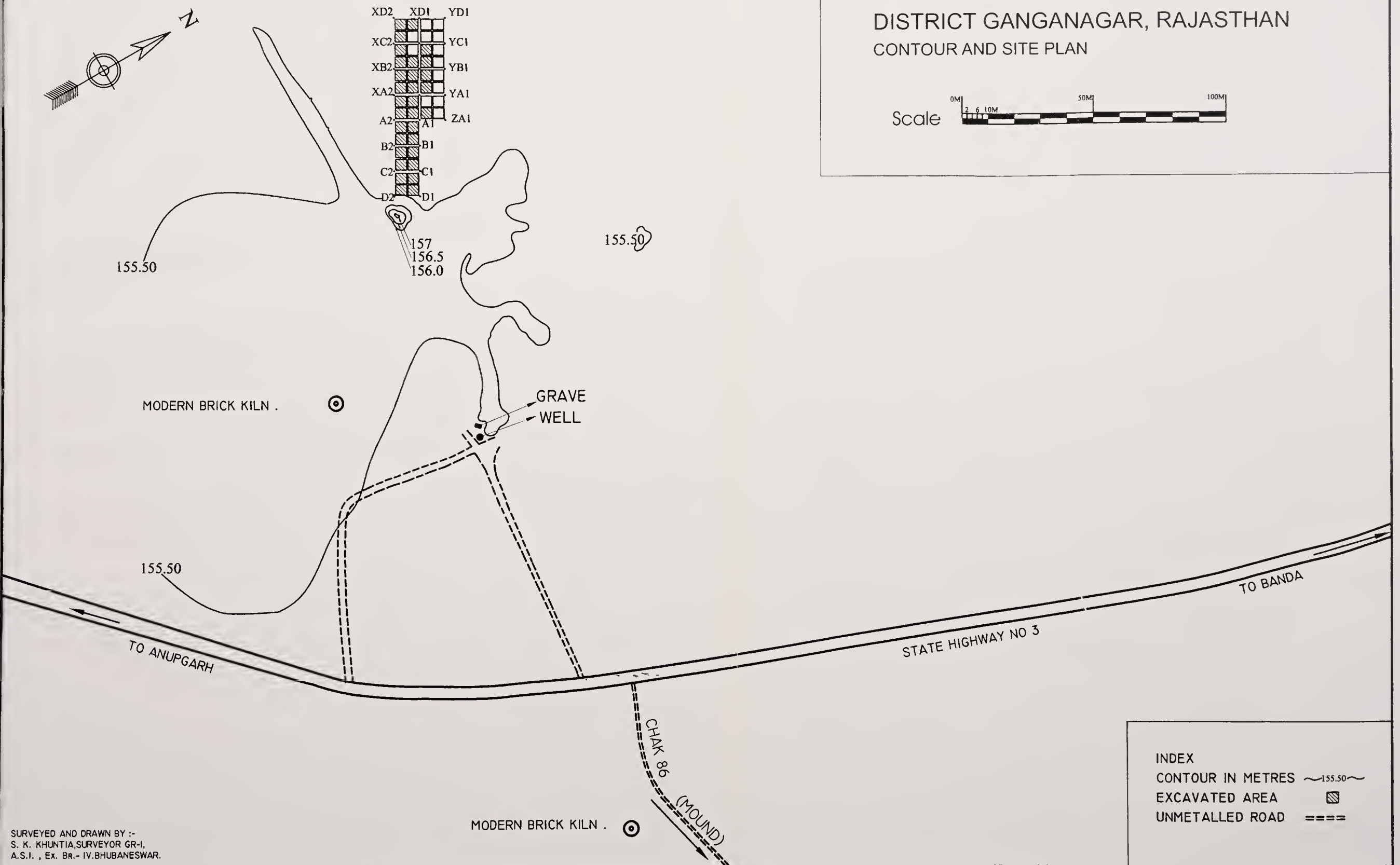


Fig. 1

SURVEYED AND DRAWN BY :-  
S. K. KHUNTIA, SURVEYOR GR-I,  
A.S.I., Ex. BR.- IV. BHUBANESWAR.





TARKHANEWALA-DERA (2003-04)  
DISTRICT GANGANAGAR, RAJASTHAN  
TRENCH XD1, Qd 3; XC1, Qd 3-4 AND XB1, Qd 4  
Section Looking North - East

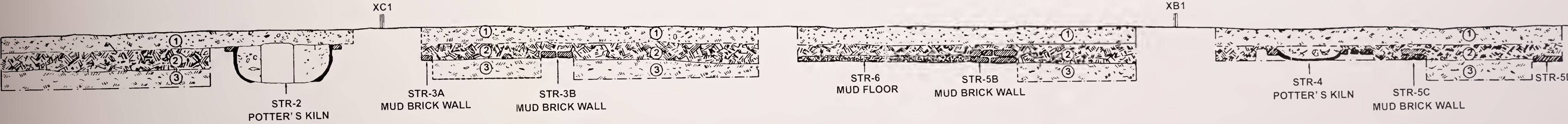


Fig. 2



TARKHANEWALA-DERA, (2003-2004)  
DISTRICT GANGANAGAR, RAJASTHAN  
TRENCH XB1, Qd 2; XA1, Qd 1 AND 2; A1, Qd 1  
Section Looking North - East

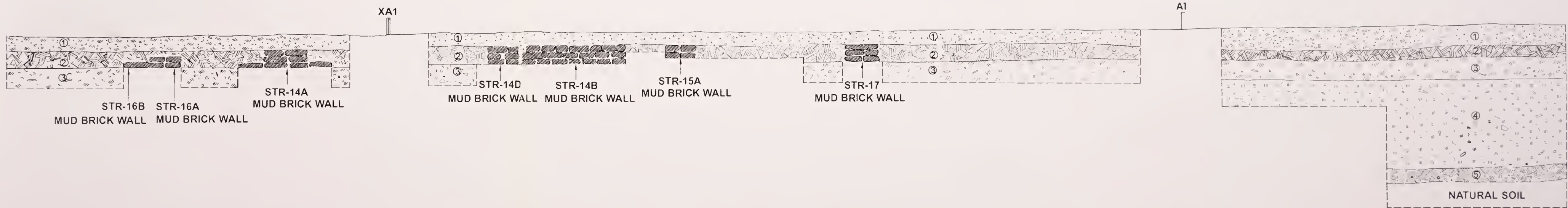


Fig. 3





TARKHANEWALA-DERA, (2003-2004)  
DISTRICT GANGANAGAR, RAJASTHAN  
HARAPPAN STRUCTURES



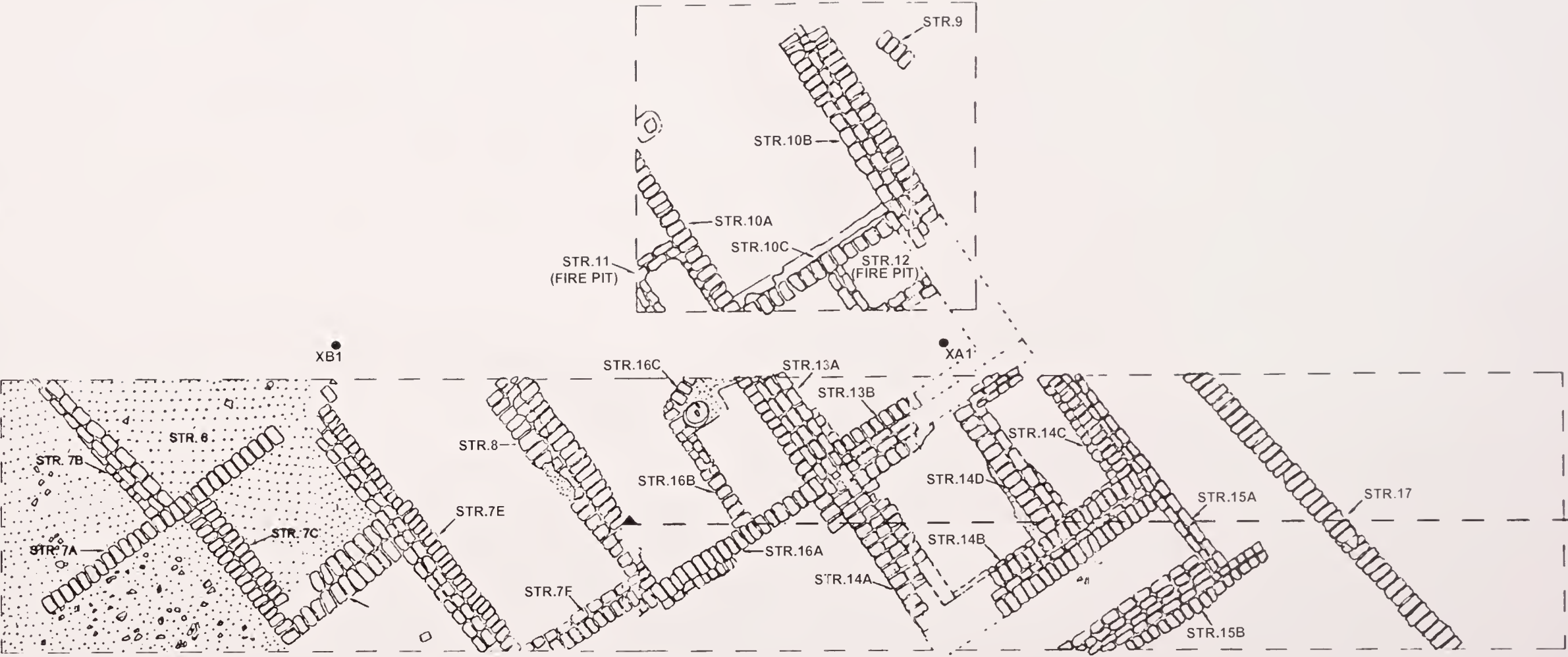
XD1

XC1

XB1

XA1

A1



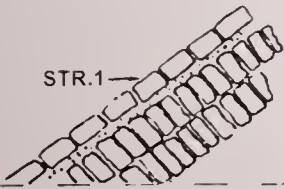
XD2

XC2

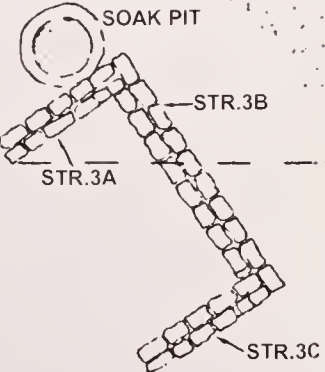
XB2

XA2

A2



STR.2  
POTTERS KILN



SOAK PIT

STR.5A

STR.5B

STR.4  
POTTERS KILN



STR.5D

STR.5C

POT

STR.18A

STR.18B

Fig. 4





TARKHANEWALA-DERA, (2003-2004)  
DISTRICT GANGANAGAR, RAJASTHAN  
HARAPPAN STRUCTURES

Scale 0 1 2 3 4m

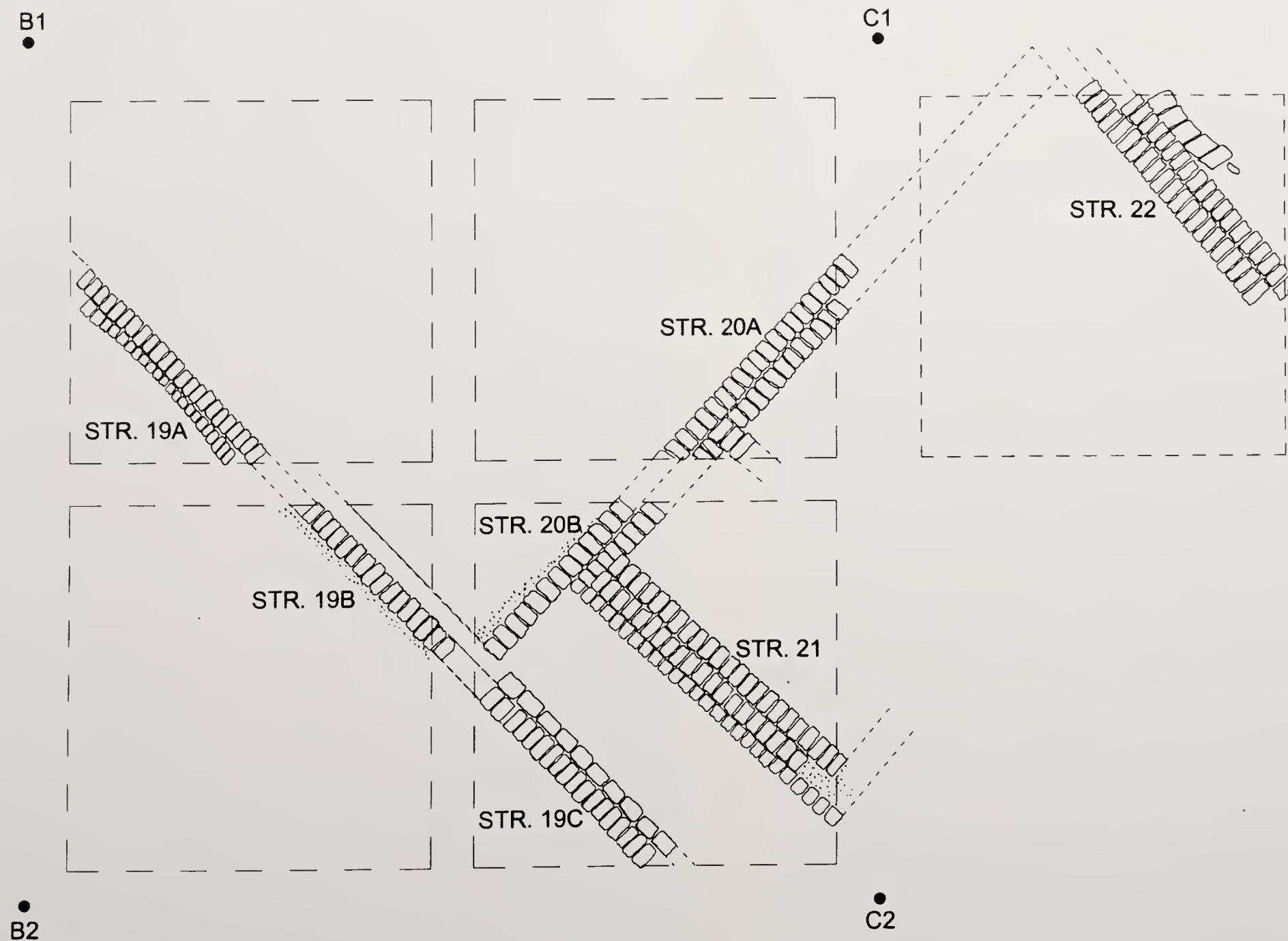


Fig. 5



# TARKHANEWALA-DERA

## 1. THE CUTTING AND STRATIGRAPHY

Originally, the ancient mound was about 4m high. Consequent upon brick manufacturing and cultivation, it has been reduced to the present level (Pl. II). Because of a large modern brick-kiln, accumulation of sand and a number of pits, its extent could not be worked out beyond an area of 4.5 hectares. As many as eleven trenches (10 x 10m) viz., A1, B1, C1, XA1, XB1, XC1, XD1, YA1, YB1, YC1 and YD1 were taken up in the available space (Fig. 1; pl. III). The exclusive Mature Harappan settlement represented by a single phase of structural activity is denoted by mud-brick structures, mud floor, mud walls, potter's kilns, fire-pits etc.

### **Trench XD1; Qd3; XC1, Qd 3-4 and XB1; Qd4 Section Looking north-east (Fig. 2)**

The section shows that layer (1) is composed of loose, grey-white sandy soil badly disturbed due to tillage. It runs all around in all the quadrants. The 20 cm thick stratum yielded pottery, brickbats, terracotta cakes, bangles, morsels and mud lumps. This layer seals STR 2 (pyriform kiln), STR 3 A and 3B (wall), STR 4 (pyriform kiln), STR 5 B,C and D (walls) and STR 6 (mud floor). Layer (2) is contemporary to these structures. Its average thickness is about 25 cm. It is represented by a compact grey deposit containing the finds similar to layer (1). This layer runs uniformly in all the trenches. Layer (2) is preceded by layer (3) which is semi-

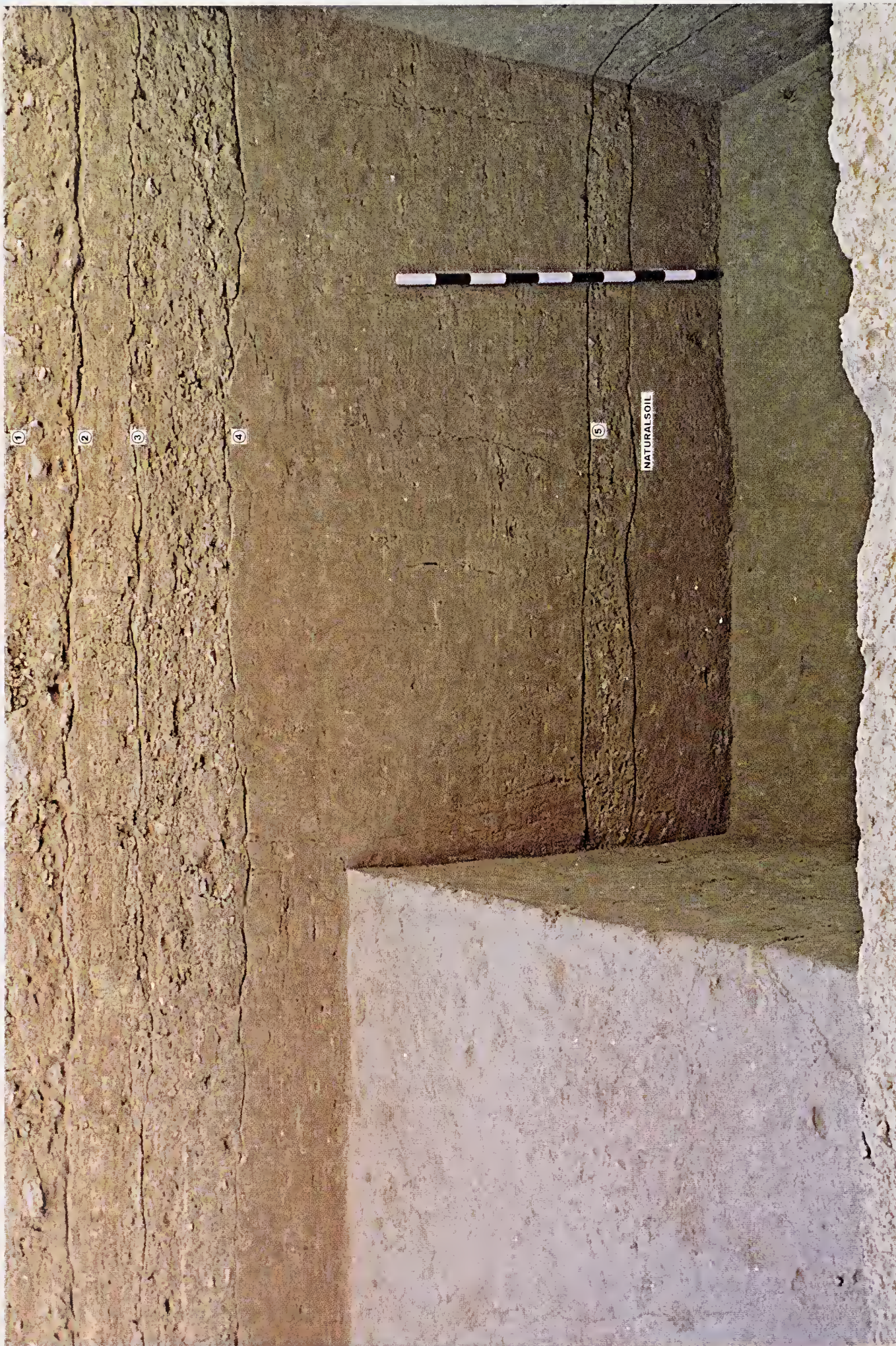
compact and greyish. It has yielded copper implements, chert blades, amulets, pottery, animal bones, terracotta bangles, terracotta cakes and other antiquities commonly found in the Mature Harappan levels. It is about 23cm in thickness. On top of layer (3) were built the above structures.

### **Trench XB1, Qd2; XA1, Qd1 and 2; A1, Qd1, Section Looking north-east (Fig. 3, pl. IV)**

In the trenches XB1, Qd 3 and XA1, Qd 4 were not excavated. The layers (1), (2) and (3) as described earlier, continue in these trenches. Layer (1) represented by loose greyish, sandy soil varies in thickness from 20-25 cm. It seals the Structures 16B, 16A, 14A, 14D, 14B, 15A and 17 resting on layer (3). Layer (2) is light grey and compact in texture. This deposit is contemporary to the above mentioned structures. Its average thickness is 15 cm. Layer (3) varies from 20-25 cm in thickness and is compact and grey. It yielded charred animal bones, pottery, terracotta cakes etc.

Trench A1, Qd 1 was excavated so as to reach natural soil (Pl. IV). Here layer (4) underlying layer (3) was found to be composed of sticky, hard greyish clay. About 1.04 m thick accumulation yielded a terracotta seal besides a few potsherds and animal bones. Layer (5) is about 20 cm thick and is made of hard, grey compact earth mixed with *kankars*, calcrete nodules and stray tiny sherds. Below this deposit was found natural soil (Table 1).





Pl. IV. Tarkhanewala-Dera : Trench A1, Qd1, section looking north-east. See p. 17



**Table - I**  
**Concordance of Layers of Harappan Levels**  
**Maximum Deposit 1.80 m**

**Square/Quadrant**

A1	B1				C1		XA1		XB1		XC1			XD1			YB1		YC1	
	Qd1	Qd2	Qd3	Qd4	Qd1	Qd2	Qd1	Qd2	Qd1	Qd2	Qd2	Qd3	Qd4	Qd1	Qd2	Qd3	Qd3	Qd4	Qd3	Qd4
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2					2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3					3	3	3	3	3	3	3	3	3	3	3	3	3	3		
4																				
5																				
Natural																				



## 2. STRUCTURES

### Salient Features of Structural Activity

The excavation taken up in the trenches *viz.* A1, B1, C1, XA1, XB1, XC1, XD1, YA1, YB1, YC1 and YD1 brought to light the evidence of structural activity of the Mature Harappan period. The main features of the settlement are as below:

1. No structural phases could be ascertained.
2. No gateway or street was found.
3. For building mud-brick structures, Mud-mortar containing charcol, ash and husk was used.
4. The sun-dried bricks measure 28x14x7 cm and 32x16x8 cm following the Harappan practice of 1:2:4.
5. No burnt-brick structure including the well, drain etc., was found.
6. Usually bricks were laid as per English bond system.
7. The mortar used is usually sticky clay, grey in colour.
8. Most of the structures follow the north-south and east-west cardinal direction but some run slightly oblique.
9. Walls having a width of one, two or three bricks have been found.
10. No foundation trenches were found, however, the structures were raised on the spread footing of mud-bricks.
11. Evidence of firing is available.
12. Two pyriform potter's kilns lined with single course of sun-dried bricks and two fire-altars lined with mud-bricks filled with charcoal, ash, terracotta cakes and potsherds were exposed immediately below the surface.
13. Mud-walls plastered with greyish mortar were found.

14. The structures are square or rectangular in plan. They represent residential area.
15. No evidence of cremation of the dead could be attested to during the present field-work. Not a single example of burial was found.

### Catalogue of Structures

#### Figs. 4-5; pls. V-XIX

##### 1. Structure 1

1. Location : Square XD1, Quadrant 4
2. Type of structure : Wall
3. Stratigraphic position : Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : (a) length 2.80m  
(b) width 1.00m  
(c) height 0.08m
6. Number of courses : One course
7. Masonry and bond : Two rows of header with 10cm thick mud filling veneered by a third row of half size bricks on the northern side.
8. Composition of mortar : Grey mortar composed of sticky clay and fine grained sand
9. Orientation of longer axis : East-west
10. Nature of bricks used : Mud-bricks
11. Dimension of bricks used : 32x16x8 cm (1:2:4)

- |  |   |   |
|--|---|---|
| 12. State of preservation :                  | Preserved   | clay mixed with   |
| 13. Shape and other distinguishing feature : | The wall might have formed a part of some civil structure. Its further nature could not be ascertained. | husk contained a square (36 x 36 cm) terracotta stele (55cm high) plastered with clay showing finger marks on the upper portion and installed in the centre to maintain uniformity of the temperature during firing. The top of the kiln is lined with a single course of bricks. The kiln contained pottery, terracotta cakes, morsels, ash etc. |

## **2. Structure 2**

- |   |  |
|---|--|
| 1. Location :                               | Square XD1, Quadrant 3   |
| 2. Type of structure :                      | Potter's kiln  |
| 3. Stratigraphic position :                 | Built on layer (3) and sealed by layer (1)                     |
| 4. Period and structural phase :            | Harappan period  |
| 5. Measurement of structure :               | (a) length 2.10m<br>(b) width 1.50m<br>(c) height 0.54m        |
| 6. Number of courses :                      | Single course around the top of the pyriform kiln              |
| 7. Masonry and bond :                       | Stretcher  |
| 8. Composition of mortar :                  | Mud-mortar turned reddish due to firing                        |
| 9. Orientation of longer axis :             | North-south  |
| 10. Nature of bricks used :                 | Sun-dried bricks baked during the firing activity of the kiln. |
| 11. Dimension of bricks used :              | 24x12x6 cm (1:2:4)   |
| 12. State of preservation :                 | Preserved  |
| 13. Shape and other distinguishing feature: | The pyriform kiln made of                                      |

## **3. Structures 3 A, 3B and 3C**

- |                                  |   |
|----------------------------------|---|
| 1. Location :                    | Square XC1, Quadrant 4  |
| 2. Type of structure :           | Three walls of a room   |
| 3. Stratigraphic position :      | It is built on layer (3) and sealed by layer (1)  |
| 4. Period and structural phase : | Harappan period   |
| 5. Measurement of structure :    | 3A (a) length 1.55 m (b) width 0.30 m (c) height 0.09 m; 3B(a) length 2.90 m (b) width 0.30 m (c) |





Pl. V. Tarkhanewala-Dera : Structures 1; 3A, B, C. See pp. 20,21,24





*Pl. VI. Tarkhanewala-Dera : Structure 2 (potter's kiln). See p. 21*



	height 0.09 m; 3C		the pyriform kiln
	(a) length 1.60 m,	7. Masonry and bond :	Mud
	(b) width 0.30 m	8. Composition :	Mud-mortar
	(c) height 0.09 m	of mortar	turned reddish
6. Number of courses :	One course		due to firing
7. Masonry and bond :	Two rows of	9. Orientation of :	North-south
	stretcher	longer axis	
8. Composition :	Grey coloured	10. Nature of bricks used :	No mud-bricks
of mortar	sticky clay		were used, instead
9. Orientation of :	3A east-west, 3B		fine clay plaster
longer axis	north-south, 3C		was applied over
	east-west		the inner side of
10. Nature of bricks used :	Mud-bricks		the kiln.
11. Dimension of :	3 6 x 1 8 x 9 c m ,	12. State of preservation :	Damaged. The
bricks used	2 8 x 1 4 x 7 c m		mud lining being
	(1:2:4)		eroded, it has also
12. State of preservation :	Preserved		lost the central
13. Shape and other :	The structure	13. Shape and other :	terracotta stele.
distinguishing feature	represents plan of	distinguishing	The pyriform
	a square or	feature	kiln is made
	rectangular room.		of mud mixed
	To its north was		with husk. It
	found the base of		c o n t a i n e d
	a large pot with a		potsherds, beads,
	hole in the		t r i a n g u l a r
	bottom, probably		terracotta cakes,
	used as a soak pit.		morsels, ash etc.

#### 4. Structure 4

1. Location :	Square XB1, Quadrant 4
2. Type of structure :	Potter's kiln
3. Stratigraphic position :	Built on layer (3) and sealed by layer (1)
4. Period and structural phase :	Harappan period
5. Measurement of structure :	(a) length 1.68 m (b) width 1.50 m (c) height 0.15 m
6. Number of courses :	Single course around the top of

#### 5. Structures 5A, 5B, 5C and 5D

1. Location :	Square XC1, Quadrant 3 Square XB1, Quadrant 4
2. Type of structure :	Four walls of a rectangular room





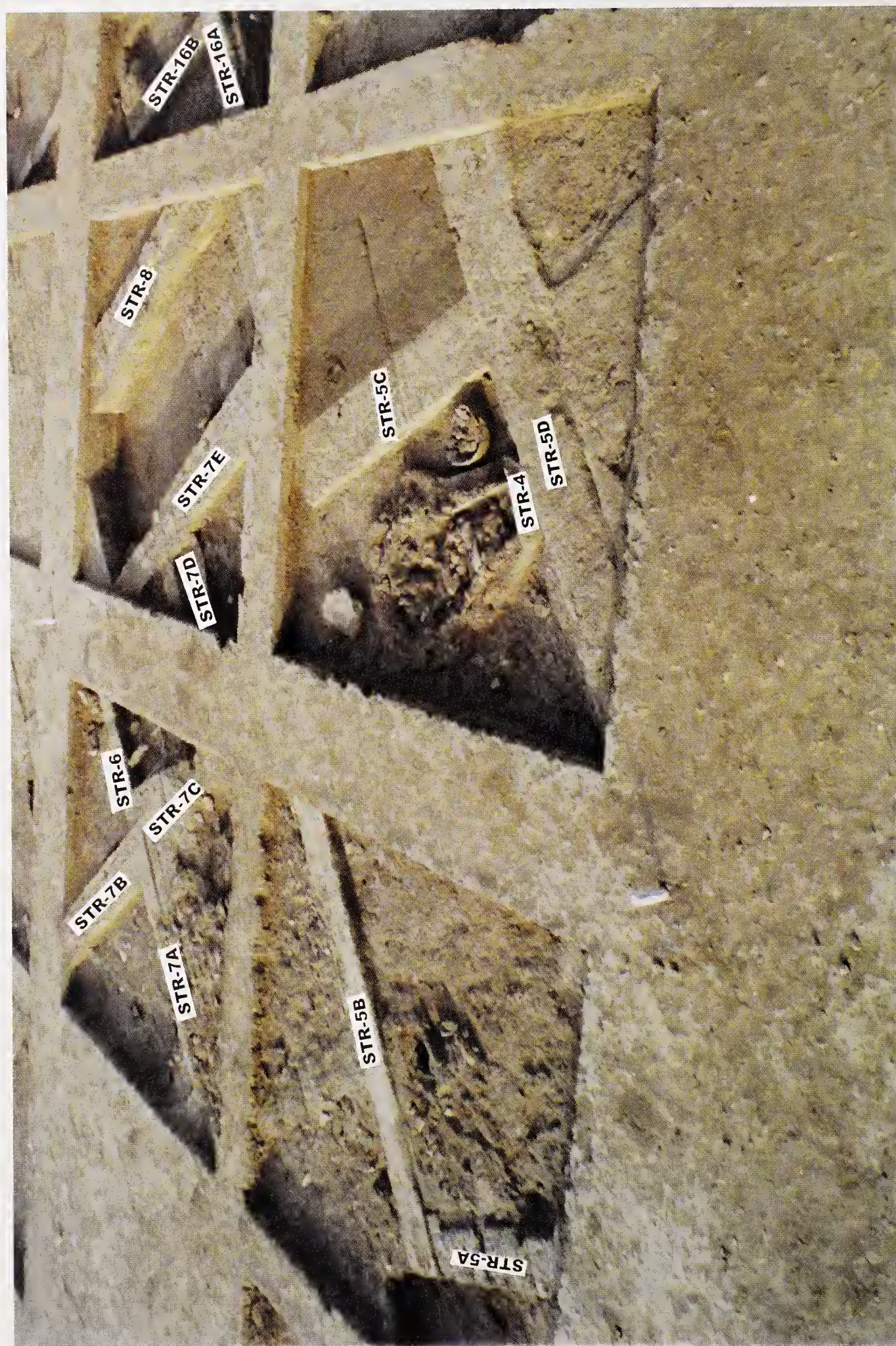
Pl. VII. Tarkhanewala-Dera : Structure 4 (potter's kiln). See p. 24



3. Stratigraphic position: Built on layer (3) and sealed by layer (1) unveiled completely. Its further extension towards east-west direction could also not be ascertained.
4. Period and structural phase : Harappan period
5. Measurement of structure : 5A (a) length 2.40 m (b) width 0.45 m (c) height 0.15 m;  
5B (a) length 4.50 m (b) width 0.45 m (c) height 0.15 m;  
5C (a) length 2.60 m (b) width 0.32 m (c) height 0.16 m;  
5D (a) length 5.0 m (b) width 0.45 m (c) height 0.15 m
6. Number of courses : 5A Two courses, 5B Two courses, 5C Two courses, 5D Two courses
7. Masonry and bond : 5(A), (B), (C) and (D) header and stretcher, English bond
8. Composition of mortar : Greyish sticky clay
9. Orientation of longer axis : East-west
10. Nature of bricks used : Mud-bricks
11. Dimension of bricks used : 28x14x7 cm (1:2:4)
12. State of preservation : Preserved
13. Shape and other distinguishing feature : The rectangular room housed a pyriform kiln (Structure 4). Its both the long arms could not be
- 6. Structure 6**
1. Location : Square XC1, Quadrant 2 and 3, Square XB1, Quadrant 1
2. Type of structure : Mud floor
3. Stratigraphic position: Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : East-west 7.0 m x north-south 6.5 m
6. Composition of mortar : Clay mixed with husk and tiny potsherds
7. Orientation of longer axis : East-west
8. State of preservation : Damaged
9. Shape and other distinguishing feature : The mud floor formed a part of the residential complex (Structure 7) made of sun-dried bricks.
- 7. Structures 7A, 7B, 7C, 7D, 7E and 7F**
1. Location : Square XC1, Quadrant 2, Square XB1, Quadrant 1

- |                                |   |  |  |   |   |
|--------------------------------|---|--|--|---|---|
| 2. Type of structure           | : | Walls of a residential complex   | 9. Orientation of longer axis              | : | North-south   |
| 3. Stratigraphic position      | : | Built on layer (3) and sealed by layer (1)   | 10. Nature of bricks used                  | : | Mud-bricks  |
| 4. Period and structural phase | : | Harappan period  | 11. Dimension of bricks used               | : | 28x14x7 cm;<br>32x16x8 cm (1:2:4)   |
| 5. Measurement of structure    | : | 7A (a) length 4.50 m (b) width 0.28 m (c) height 0.07m;<br>7B (a) length 2.70 m (b) width 0.46 m (c) height 0.07 m;<br>7C (a) length 2.30 m (b) width 0.48 m (c) height 0.15 m;<br>7D (a) length 0.90 m (b) width 0.70 m (c) height 0.15 m;<br>7E (a) length 2.80 m (b) width 0.70 m (c) height 0.14 m;<br>7F (a) length 2.00 m (b) width 0.47 m (c) height 0.14 m | 12. State of preservation                  | : | Not fully exposed   |
| 6. Number of courses           | : | 7A Two courses, 7B One course, 7C,D,E,F Two courses  | 13. Shape and other distinguishing feature | : | The residential complex includes a square room with contiguous walls running in north-south and east-west directions. It was provided with a mud floor (Structure 6). |
| 7. Masonry and bond            | : | Header and stretcher, English bond   | <b>8. Structure 8</b>                      |   |   |
| 8. Composition of mortar       | : | Greyish sticky clay  | 1. Location                                | : | Square XB1, Quadrant 1  |
|                                |   |  | 2. Type of structure                       | : | Wall  |
|                                |   |  | 3. Stratigraphic position                  | : | Built on layer (3) and sealed by layer (1)  |
|                                |   |  | 4. Period and structural phase             | : | Harappan period   |
|                                |   |  | 5. Measurement of structure                | : | (a) length 3.00 m (b) width 0.80 m (c) height 0.08 m  |
|                                |   |  | 6. Number of courses                       | : | Two courses   |
|                                |   |  | 7. Masonry and bond                        | : | Header  |
|                                |   |  | 8. Composition of mortar                   | : | Greyish clay  |
|                                |   |  | 9. Orientation of longer axis              | : | North-south   |
|                                |   |  | 10. Nature of bricks used                  | : | Mud-bricks  |
|                                |   |  | 11. Dimension of bricks used               | : | 32x16x8 cm (1:2:4)  |
|                                |   |  | 12. State of preservation                  | : | Good but with a crack towards the northern end.   |





Pl. VIII. Tarkhanewala-Dera : Structures 4; 5A,B,C,D; 6; 7A,B,C,D,E; 8; 16A,B. See pp. 24,26,27,35,37



- |  |   |  |                                |   |  |
|--|---|--|--------------------------------|---|--|
| 13. Shape and other distinguishing feature | : | The wall runs parallel to the structure 7E and probably its southern end joins the structure 7F to form a rectangle. |                                |   | and sealed by layer (1)                                    |
|  |   |  | 4. Period and structural phase | : | Harappan period  |
|  |   |  | 5. Measurement of structure    | : | 10 A (a) length 2.80 m (b) width 0.32 m (c) height 0.08 m; |

### 9. Structure 9

- |  |   |  |  |   |  |
|--|---|--|--|---|--|
| 1. Location                                | : | Square YB1, Quadrant 3                               |  |   | 10B (a) length 3.50 m (b) width 0.65 m (c) height 0.16 m;  |
| 2. Type of structure                       | : | Wall   |  |   | 10C (a) length 1.35 m (b) width 0.60 m (c) height 0.16 m   |
| 3. Stratigraphic position                  | : | Built on layer (3) and sealed by layer (1)           |  |   |  |
| 4. Period and structural phase             | : | Harappan period                                      | 6. Number of courses                       | : | 10A One course, 10B Two courses and 10C Two courses  |
| 5. Measurement of structure                | : | (a) length 0.70 m (b) width 0.32 m (c) height 0.07 m | 7. Masonry and bond                        | : | 10A Header, 10B Header and stretcher and 10C Header.   |
| 6. Number of courses                       | : | One course   | 8. Composition of mortar                   | : | Greyish clay   |
| 7. Masonry and bond                        | : | Header   | 9. Orientation of longer axis              | : | North-south  |
| 8. Composition of mortar                   | : | Grey coloured clay                                   | 10. Nature of bricks used                  | : | Mud-bricks   |
| 9. Orientation of longer axis              | : | North-south  | 11. Dimension of bricks used               | : | 32x16x8 cm (1:2:4)   |
| 10. Nature of bricks used                  | : | Mud-bricks   | 12. State of preservation                  | : | Eroded   |
| 11. Dimension of bricks used               | : | 28x14x7 cm (1:2:4)                                   | 13. Shape and other distinguishing feature | : | The Structures 10A, 10B and 10C represent three walls of an angular mud brick-built room. To the west and south were found two fire-pits (Structures 11 and 12). |
| 12. State of preservation                  | : | Damaged, eroded and robbed off                       |  |   |  |
| 13. Shape and other distinguishing feature | : | Portion of a wall                                    |  |   |  |

### 10. Structures 10A, 10B and 10C

- |                           |   |                        |
|---------------------------|---|------------------------|
| 1. Location               | : | Square YB1, Quadrant 3 |
| 2. Type of structure      | : | Wall                   |
| 3. Stratigraphic position | : | Built on layer (3)     |



**11. Structure 11**

- |  |   |  |   |
|--|---|--|---|
| 1. Location                                | : Square YB1, Quadrant 3  | 2. Type of structure                       | : Fire-pit  |
| 2. Type of structure                       | : Fire-pit  | 3. Stratigraphic position:                 | Built on layer (3) and sealed by layer (1)  |
| 3. Stratigraphic position:                 | Built on layer (3) and sealed by layer (1)  | 4. Period and structural phase             | : Harappan period   |
| 4. Period and structural phase             | : Harappan period   | 5. Measurement of structure                | : (a) length 1.00 m<br>(b) width 0.80 m<br>(c) height 0.15 m  |
| 5. Measurement of structure                | : (a) length 1.40 m<br>(b) width 1.00 m<br>(c) height 0.16 m  | 6. Number of courses                       | : Two courses   |
| 6. Number of courses                       | : Two courses   | 7. Masonry and bond                        | : Header and stretcher, English bond  |
| 7. Masonry and bond                        | : Header and stretcher  | 8. Composition of mortar                   | : Clay  |
| 8. Composition of mortar                   | : Clay  | 9. Orientation of longer axis              | : East-west   |
| 9. Orientation of longer axis              | : North-south   | 10. Nature of bricks used                  | : Mud-bricks  |
| 10. Nature of bricks used                  | : Mud-bricks turned reddish due to fire activity  | 11. Dimension of bricks used               | : 32x16x8 cm (1:2:4)  |
| 11. Dimension of bricks used               | : 32x16x8 cm (1:2:4)  | 12. State of preservation                  | : Eroded, its southern arm requires to be exposed   |
| 12. State of preservation                  | : Damaged   | 13. Shape and other distinguishing feature | : The rectangular fire-pit was found filled with loose earth, burnt clay, terracotta cakes, morsels, chert blades, charred bones etc. Its top has retained two courses of mud-bricks. |
| 13. Shape and other distinguishing feature | : Rectangular fire-pit lined with mud-bricks was found filled with ash, morsels, terracotta cakes, charred bones, terracotta bangle fragments, potsherds of grey and dull red ware etc. |  |   |

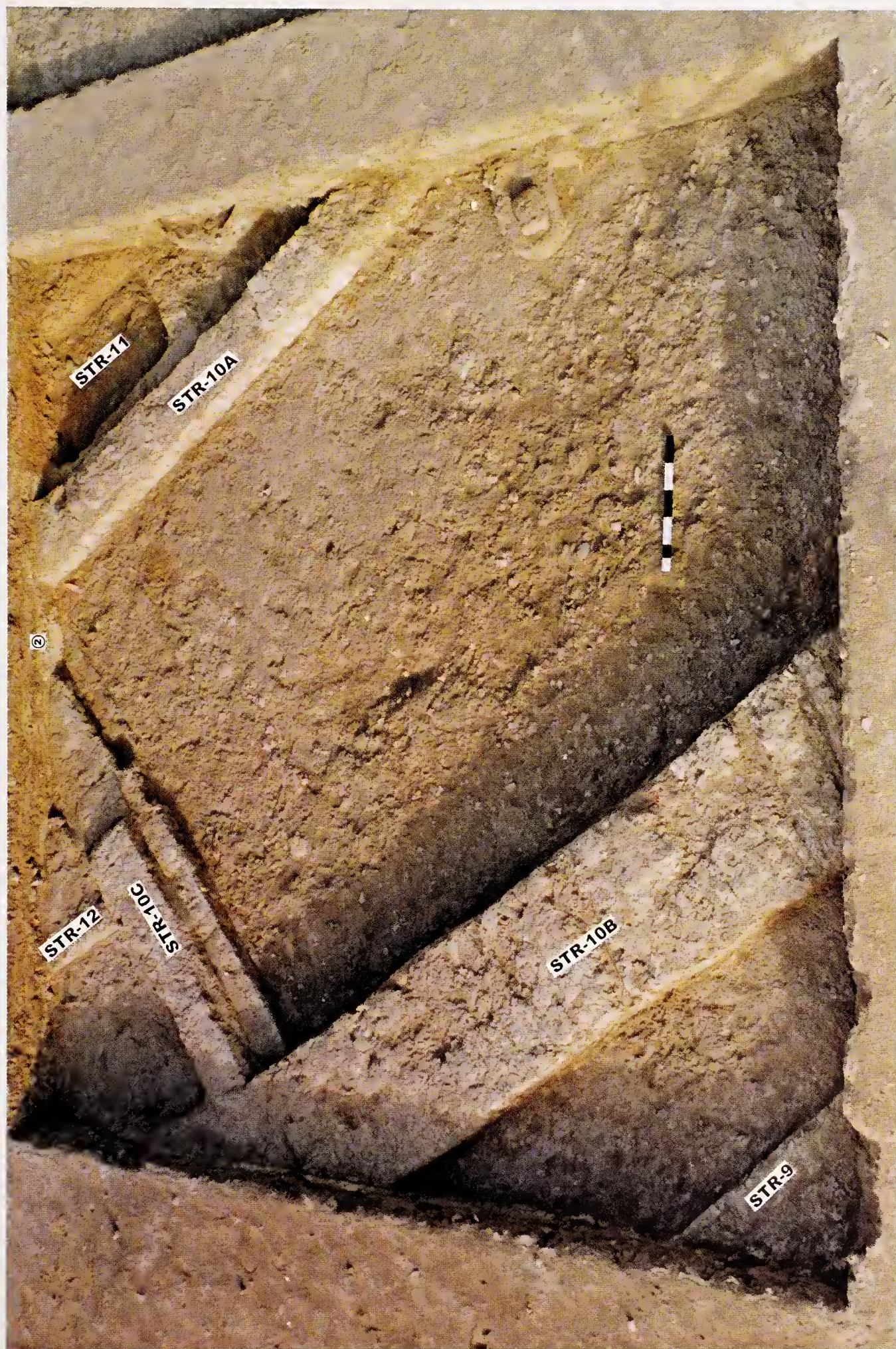
**12. Structure 12**

1. Location : Square YB1, Quadrant 3

**13. Structures 13A and 13B**

1. Location : Square XB1, Quadrant 2, Square XA1, Quadrant 1





Pl. IX. Tarkhanewala-Dera : Structures 9; 10A,B,C; 11; 12. See pp. 29,30





Pl. X. Tarkhanewala-Dera : Structure 11 (fire-pit). See p. 30





Pl. XI. Tarkhanewala-Dera : Structure 12 (fire-pit). See p. 30



2. Type of structure : Wall
3. Stratigraphic position: Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : 13A (a) length 2.0 m (b) width 0.65 m (c) height 0.16 m;  
13B (a) length 3.50 m (b) width 0.80 m (c) height 0.16 m.
6. Number of courses : Two courses
7. Masonry and bond : Header and stretcher, English bond
8. Composition of mortar : Greyish clay
9. Orientation : 13A north-south  
13B east-west
10. Nature of bricks used: Mud bricks
11. Dimension of bricks used : 32 x 16 x 8 cm (1:2:4)
12. State of preservation : Eroded and robbed
13. Shape and other distinguishing feature : Structures 13A and 13B form a chamber with Structure 10C. The opposite north-south arm of Structure 13A could not be excavated.

#### 14. Structures 14A, 14B, 14C and 14D

1. Location : Square XB1, Quadrant 2, Square XA1, Quadrant 1

2. Type of structure : Room with three walls and a partition wall
3. Stratigraphic position: Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : 14A (a) length 3.0 m (b) width 0.80 m (c) height 0.24 m;  
14B (a) length 4.50 m (b) width 0.80 m (c) height 0.24 m;  
14C (a) length 3.0 m (b) width 0.65 m (c) height 0.16 m;  
14D (a) length 2.0 m (b) width 0.65 m (c) height 0.25 m
6. Number of courses : 14A Three courses, 14B Three courses, 14C Two courses and 14D Three courses
7. Masonry and bond : Header and stretcher, English bond
8. Composition of mortar : Greyish clay
9. Orientation of longer axis : 14A north-south  
14B east-west  
14C north-south and 14D north-south
10. Nature of bricks used: Mud-bricks
11. Dimension of bricks used : 20x10x5 cm, 28x14x7 cm, 32x16x8 cm (1:2:4)

- |  |   |  |  |
|--|---|--|--|
| 12. State of preservation :                  | Eroded and robbed   | 13. Shape and other distinguishing feature : | It forms a rectangular chamber with Structure 14B. It was possibly meant for a kitchen as testified by remnants of pots, ash, charred bones etc. |
| 13. Shape and other distinguishing feature : | It forms a rectangular room with Structure 13B. It is divided by a wall (Structure 14D) |  |  |

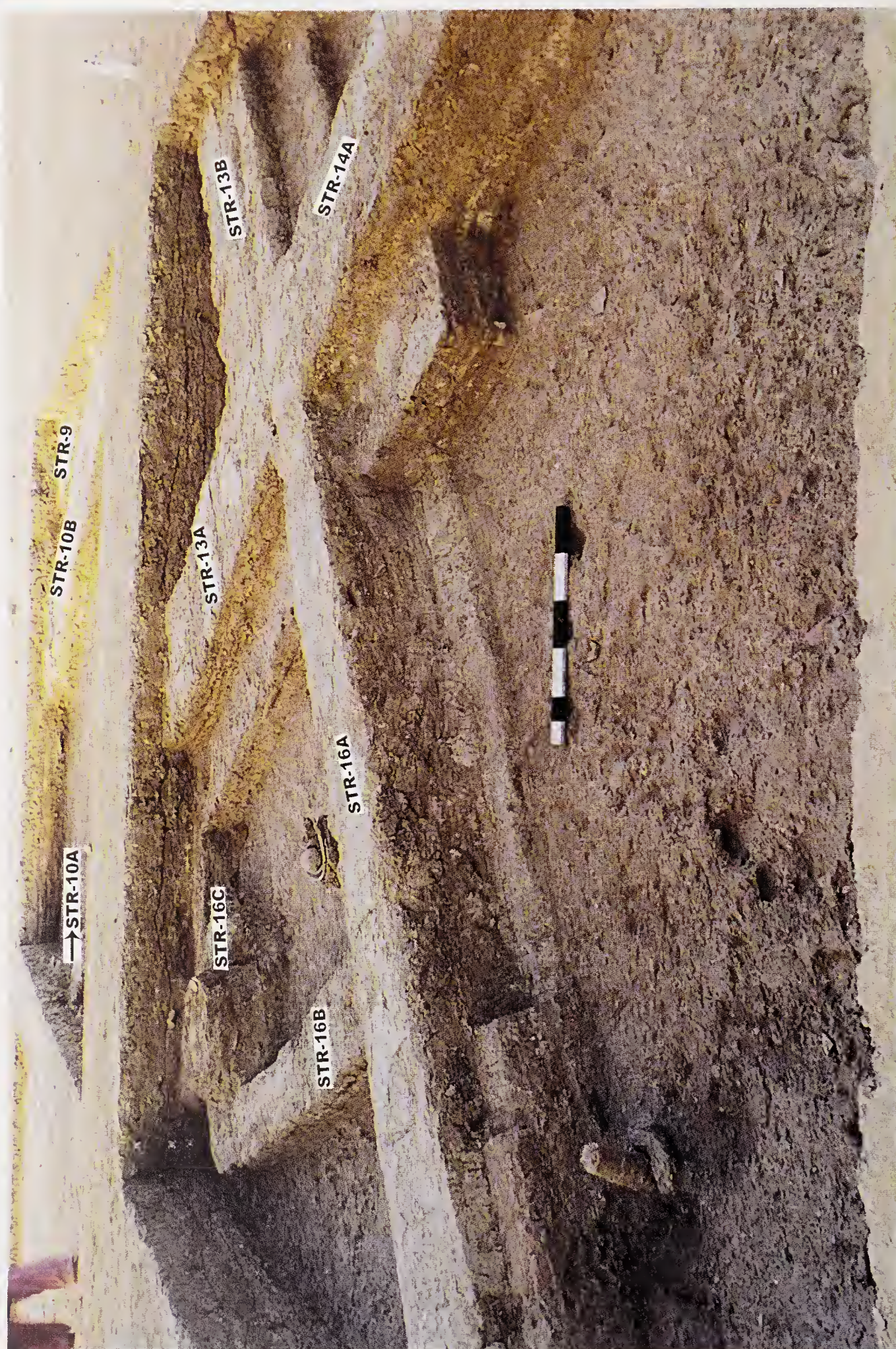
### 15. Structures 15A and 15B

1. Location : Square XA1 Quadrant 1
2. Type of structure : Wall
3. Stratigraphic position: Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : 15A (a) length 0.90 m (b) width 0.32 m (c) height 0.16 m;  
15B (a) length 3.50 m (b) width 0.80 m (c) height 0.16 m
6. Number of courses : Two courses
7. Masonry and bond : Header and stretcher, English bond
8. Composition of mortar : Yellowish clay
9. Orientation of longer axis : 15A north-south, 15B east-west
10. Nature of bricks used : Mud-bricks
11. Dimension of bricks used : 20x10x5 cm, 32x16x8 cm (1:2:4)
12. State of preservation : Good, the structure has not been completely excavated.

### 16. Structures 16A, 16B and 16C

1. Location : Square XB1 Quadrant 2
2. Type of structure : Wall
3. Stratigraphic position: Built on layer (3) and sealed by layer (1)
4. Period and structural phase : Harappan period
5. Measurement of structure : 16A (a) length 3.0m (b) width 0.28m (c) height 0.14m;  
16B (a) length 2.0m (b) width 0.28m (c) height 0.07m;  
16C (a) length 1.10m (b) width 0.10m (c) height 0.08m.
6. Number of courses : 16A One course, 16B Two courses and 16C One course.
7. Masonry and bond : Header
8. Composition of mortar : Greyish clay
9. Orientation of longer axis : 16A east-west  
16B north-south  
16C east-west





Pl. XII. Tarkhanewala-Dera : Structures 9; 10A,B; 13A,B; 14A; 16A,B,C. See pp. 29,30,34,35



- |  |  |  |  |
|--|--|--|--|
| 10. Nature of bricks used :                  | Mud-bricks   | 13. Shape and other distinguishing feature : | Perhaps this wall would have joined Structure 9 as it falls in the same alignment. |
| 11. Dimension of bricks used :               | 28x14x7 cm (1:2:4)   |  |  |
| 12. State of preservation :                  | Good   |  |  |
| 13. Shape and other distinguishing feature : | It forms a rectangle with a mud wall 16C running in east-west direction. Near the mud wall were noticed a soak pit, burnt clay, ash and potsherds. Perhaps it was used as a kitchen. |  |  |

**17. Structure 17**

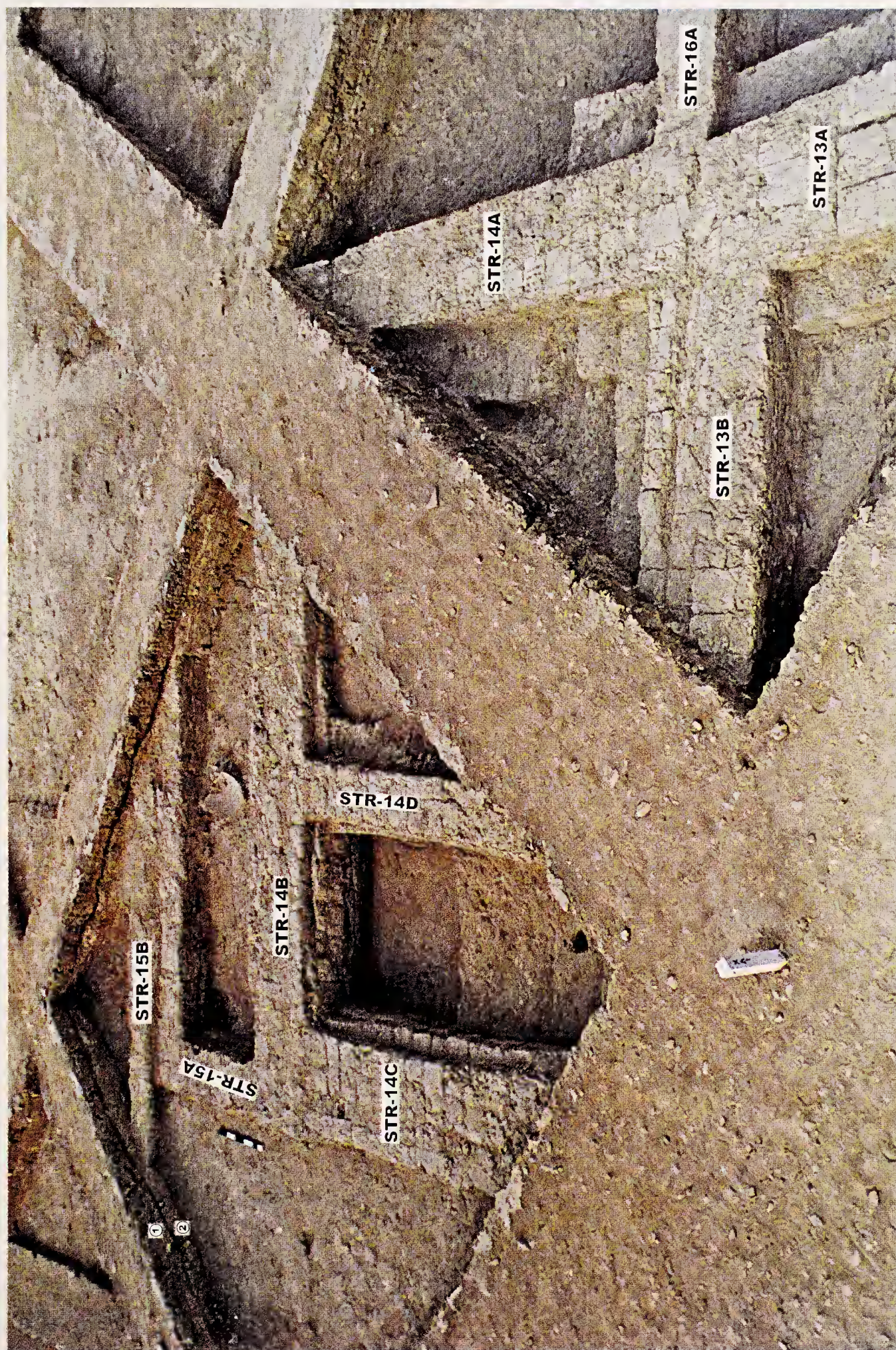
- |                                  |  |  |  |
|----------------------------------|--|--|--|
| 1. Location :                    | Square XA1, Quadrants 1, 2, 3                    | 18. Structures 18A and 18B                   |  |
| 2. Type of structure :           | Wall   | 1. Location :                                | Square XA1, Quadrant 3   |
| 3. Stratigraphic position:       | Built on layer (3) and sealed by layer (1)       | 2. Type of structure :                       | Mud-wall   |
| 4. Period and structural phase : | Harappan period                                  | 3. Stratigraphic position:                   | Built on layer (3) and sealed by layer (1)   |
| 5. Measurement of structure :    | (a) length 9.0m (b) width 0.30m (c) height 0.20m | 4. Period and structural phase :             | Harappan period  |
| 6. Number of courses :           | Three courses                                    | 5. Measurement of structure :                | 18A (a) length 2.30m (b) width 0.45m (c) height 0.10m; 18B (a) length 2.30m (b) width 0.55m (c) height 0.12m |
| 7. Masonry and bond :            | Header   | 6. Masonry and bond :                        | Mud mixed with husk  |
| 8. Composition of mortar :       | Greyish clay                                     | 7. Composition of mortar :                   | Drab hard mud clay containing potsherds.   |
| 9. Orientation of longer axis :  | North-south                                      | 8. Orientation of longer axis :              | 18A east-west, 18B north-south   |
| 10. Nature of bricks used :      | Mud-bricks                                       | 9. State of preservation :                   | Eroded, not completely excavated.  |
| 11. Dimension of bricks used :   | 28x14x7 cm (1:2:4)                               | 10. Shape and other distinguishing feature : | The structures formed the corner arms of a room made of mud-walls.   |
| 12. State of preservation :      | Eroded, not completely excavated                 | 19. Structures 19A, 19B and 19C              |  |
|                                  |  | 1. Location :                                | Square B1, Quadrants 1, 3, 4   |





Pl. XIII. Tarkhanewala-Dera : Structures 14B, C, D; 15A, B. See pp. 34, 35





Pl. XIV. Tarkhanewala-Dera : Structures 13A,B; 14A,B,C,D; 15A,B; 16A. See pp. 30,34,35,37





Pl. XV. Tarkhanewala-Dera : Structures 10A,B,C; 13A,B; 14A,B,C,D; 15A,B; 16A,B,C; 17. See pp. 29,30,34,35,37



- |  |   |   |  |  |
|--|---|---|--|--|
| 2. Type of structure                       | : | Wall  | 3. Stratigraphic position:                 | Built on layer (3) and sealed by layer (1)   |
| 3. Stratigraphic position:                 |   | Built on layer no.(3) and sealed by layer(1)  | 4. Period and structural phase             | : Harappan period  |
| 4. Period and structural phase             | : | Harappan period   | 5. Measurement of structure                | : 20A (a) length 3.30m (b) width 0.48m (c) height 0.16;<br>20B (a) length 2.20m (b) width 0.32m (c) height 0.16m |
| 5. Measurement of structure                | : | 19A (a) length 3.25 m (b) width 0.42 m (c) height 0.22 m;<br>19B (a) length 2.50 m (b) width 0.28 m (c) height 0.20m;<br>19C (a) length 3.40 m (b) width 0.48 m (c) height 0.22 m | 6. Number of courses                       | : Two courses  |
| 6. Number of courses                       | : | Three courses   | 7. Masonry and bond                        | : Header and stretcher, English bond   |
| 7. Masonry and bond                        | : | Header and stretcher, English bond  | 8. Composition of mortar                   | : Greyish clay   |
| 8. Composition of mortar                   | : | Greyish clay  | 9. Orientation of longer axis              | : East-west  |
| 9. Orientation of longer axis              | : | north-south   | 10. Nature of bricks used                  | : Mud-bricks   |
| 10. Nature of bricks used                  | : | Mud-brick   | 11. Dimension of bricks used               | : 32x16x8 cm (1:2:4)   |
| 11. Dimension of bricks used               | : | 28x14x7 cm, 32x16x8 cm (1:2:4)  | 12. State of preservation                  | : Damaged and robbed.  |
| 12. State of preservation                  | : | Good  | 13. Shape and other distinguishing feature | : It is a straight long wall which joins Structures 19C and 21.  |
| 13. Shape and other distinguishing feature | : | It is a straight long wall.   |  |  |

**20. Structures 20A and 20B**

- |                      |   |                              |
|----------------------|---|------------------------------|
| 1. Location          | : | Square B1, Quadrants 1, 3, 4 |
| 2. Type of structure | : | Wall                         |

**21. Structure 21**

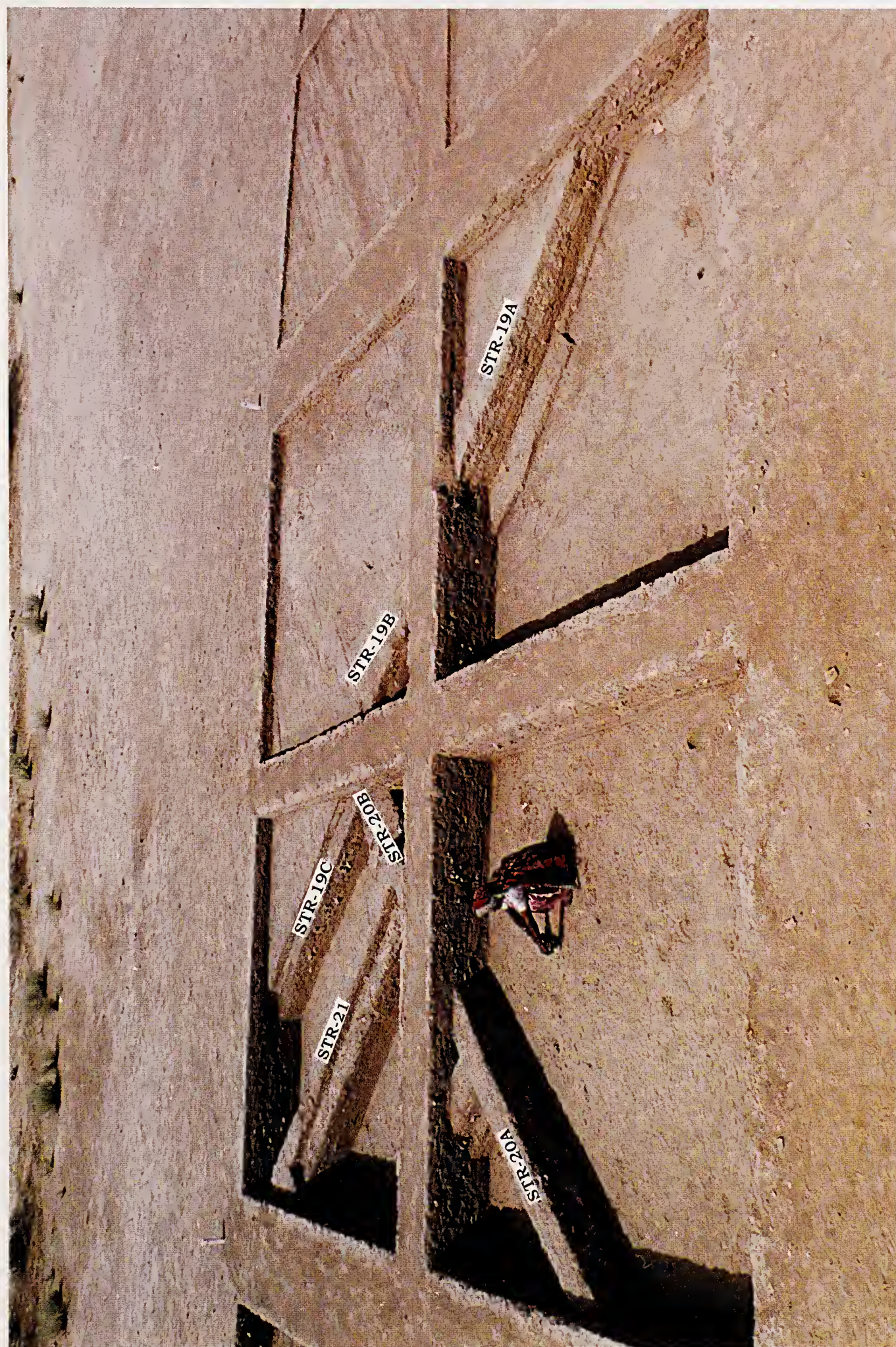
- |                                |   |   |
|--------------------------------|---|---|
| 1. Location                    | : | Square B1, Quadrant 3                     |
| 2. Type of structure           | : | Wall                                      |
| 3. Stratigraphic position:     |   | Built on layer (3) and sealed by layer(1) |
| 4. Period and structural phase | : | Harappan period                           |





Pl. XVI. Tarkhanewala-Dera : Structure 19A. See pp. 37, 41





Pl. XVII. Tarkhanewala-Dera : Structures 19A,B,C; 20A,B; 21. See pp. 37,41,46





Pl. XVIII. Tarkhanewala-Dera : Structure 22. See p. 46





Pl. XIX. Tarkhanewala-Dera : Structure 19A,B,C; 20A,B; 21; 22. See pp. 20,37,41,46



- |  |   |   |  |   |
|--|---|---|--|---|
| 5. Measurement of structure                | : | (a) length 4.20 m<br>(b) width 0.70 m<br>(c) height 0.14 m                                    | 12. State of preservation :                | Good, but one row of bricks is dislodged and robbed.  |
| 6. Number of courses                       | : | Two courses   | 13. Shape and other distinguishing feature | It is a straight wall forming a component of Structures 20A, B and 21, so as to form a large rectangular chamber. |
| 7. Masonry and bond                        | : | Header  |  |   |
| 8. Composition of mortar                   | : | Greyish clay  |  |   |
| 9. Orientation of longer axis              | : | East-west   |  |   |
| 10. Nature of bricks used                  | : | Mud-bricks  |  |   |
| 11. Dimension of bricks used               | : | 28x14x7 cm (1:2:4)  |  |   |
| 12. State of preservation                  | : | Good  |  |   |
| 13. Shape and other distinguishing feature | : | Straight wall joins structure 20 so as to form a large rectangular chamber with Structure 22. |  |   |

### 3. THE POTTERY

The present excavation at Tarkhanewala-Dera yielded a Mature Harappan ceramic assemblage. It falls into four major groups viz., Red ware, Grey ware, Red-slipped ware, Black on red ware and other decorated ware. Each of these forms a diagnostic trait in the cultural assemblage of the period. Table II shows the frequency distribution and the percentage (in italics) of each industry in each layer (Fig.6). Pottery yield diminishes gradually from layer (1) to layer (4), layer (1) recording the maximum. Industry-wise, red ware accounts for more than 78% of total assemblage. And less than 10% of pottery is either painted or decorated which occurs largely in the upper level (Fig.7).

The bulk of pottery has regular horizontal striation marks indicating them to be prepared on fast wheel though few handmade ones are also not altogether wanting. A fair majority of the pottery is with a reddish oxidized core, well-fired and emits metallic sound. In few cases, however, a faint greyish zone is visible, possibly they are fired at a low temperature or for shorter duration. Surface of these potteries varies from red, drab to blotchy grey.

Fine sand mixed with well levigated clay is used as tempering material whereas no coarse

### 22. Structure 22

- |                                |   |   |
|--------------------------------|---|---|
| 1. Location                    | : | Square C1, Quadrant 1                                   |
| 2. Type of structure           | : | Wall  |
| 3. Stratigraphic position      | : | Built on layer (3) and sealed by layer (1)              |
| 4. Period and structural phase | : | Harappan period   |
| 5. Measurement of structure    | : | (a) length 3.50m<br>(b) width 0.84m<br>(c) height 0.16m |
| 6. Number of courses           | : | Two courses   |
| 7. Masonry and bond            | : | Header  |
| 8. Composition of mortar       | : | Greyish clay  |
| 9. Orientation of longer axis  | : | North-south   |
| 10. Nature of bricks used      | : | Mud-bricks  |
| 11. Dimension of bricks used   | : | 28x14x7 cm (1:2:4)                                      |



**Table-II**  
**FREQUENCIES AND PERCENTAGES (FIGURES IN ITALICS) OF SHERDS**  
**OF THE CERAMIC INDUSTRIES**  
**IN EACH LAYER**

Industry Layer	Red Ware	Grey Ware	Red-Slipped Ware	Black on Red Ware	Other Decorated Ware	Total Ware
1	460 75.40	10 1.63	85 13.93	28 4.59	27 4.42	610
2	340 80.76	9 2.13	31 7.36	25 5.93	16 3.80	421
3	85 81.73	3 2.88	4 3.84	12 11.53	- -	104
4	15 83.33	-	1 5.55	2 11.11	- -	18
Total	900 78.05	22 1.90	121 10.94	67 5.81	43 3.72	1153



degraissant or vegetal matter is visible in the pot. Sometimes mica has been employed as degraissant. Though majority of them are devoid of any surface dressing, few are treated with a wash or slip. Thus, a fair quantity of red ware is unslipped and the fabric is medium. The slipped ware in this variety has a consistently smooth paste and is also well-fired. The commonest shapes are beaker, goblet, perforated jar, storage jar, dish-on-stand, basin, dish, bowl etc.

Few red ware sherds are also painted, mostly executed before firing. The colour scheme normally adopted is black on a red background. The repertoire of painting comprises naturalistic, semi-naturalistic and geometric designs. Among the motifs, mention be made of *pipal* leaf, palm tree, acacia tree, banana, fish motif, fish scale, sun symbol, circle, parallel lines and other indeterminate patterns. The other decorated ware includes incised and appliqué variety. The decoration was executed during the plastic or leather-hard condition. The designs, executed both on the interior and exterior of the vessel consists of wavy lines, parallel lines, herring bone pattern, slashes, intersecting lines, criss-cross etc.

The following select types are illustrated:-

#### A. Red ware

##### Figs. 8-11

1. Fragment of a vase with an out-turned featureless rim and concave neck. Of fine fabric showing an oxidized brick-red core, it is treated with a wash on the exterior.
2. Fragment of a dish with a nail headed rim, bluntly carinated above the sloping sides and a thickened flat base. Of medium fabric showing oxidized smoky core, it is treated with a wash on both sides.
3. Fragment of a jar with a beaked rim, short neck and expanding profile. Of medium fabric showing a fully oxidized core, it is treated with a deep red wash on the exterior and painted with a black band at the outer edge of the rim.
4. Fragment of a basin with a short projected rim and tapering sides. Of medium fabric showing a fully oxidized core, its shoulder is decorated with two horizontal shallow grooves on the exterior.
5. Fragment of a deep basin with a short projected drooping rim and slightly tapering sides. Of medium fabric showing unoxidized smoky core, it is treated with a wash on the exterior.
6. Fragment of a jar with a beaked rim, concave neck and bulging profile. Of medium fabric showing an oxidized core, it is washed on the exterior and decorated with a horizontal groove at the shoulder.
7. Fragment of a vase with a splayed out featureless rim, carinated neck and possibly globular body. Of medium fabric showing unoxidized core, it is devoid of any surface dressing.
8. Fragment of a vase with a beaded under-cut rim, roughly vertical neck and carinated at shoulder to an expanding profile. Of medium fabric showing a fully oxidized core, it is treated with an ochre colour wash.
9. Fragment of a vase with an externally thickened rim, roughly concave but grooved neck and a globular body. Of medium fabric showing a semi oxidized core it is treated with a red wash on the exterior.
10. Fragment of a vase with flat topped externally slightly bevelled and internally grooved rim, concave neck and expanding body. Of medium fabric showing an oxidized smoky core, it is treated with a red wash on both the sides.



# DISTRIBUTION OF THE CERAMIC INDUSTRIES, TARKHANEWALA-DERA

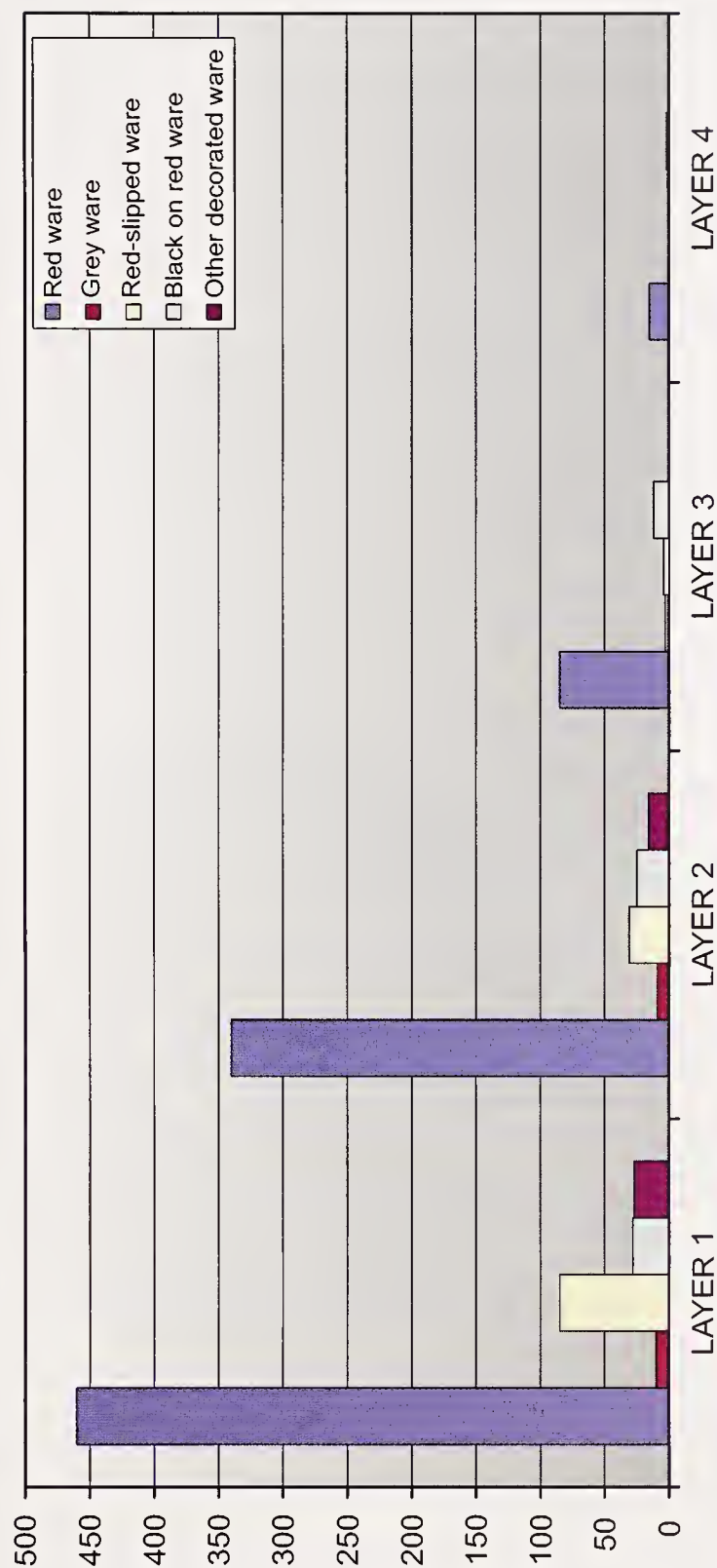


Fig. 6



## PERCENTAGE WISE DISTRIBUTION OF CERAMIC INDUSTRIES, TARKHANEWALA-DERA

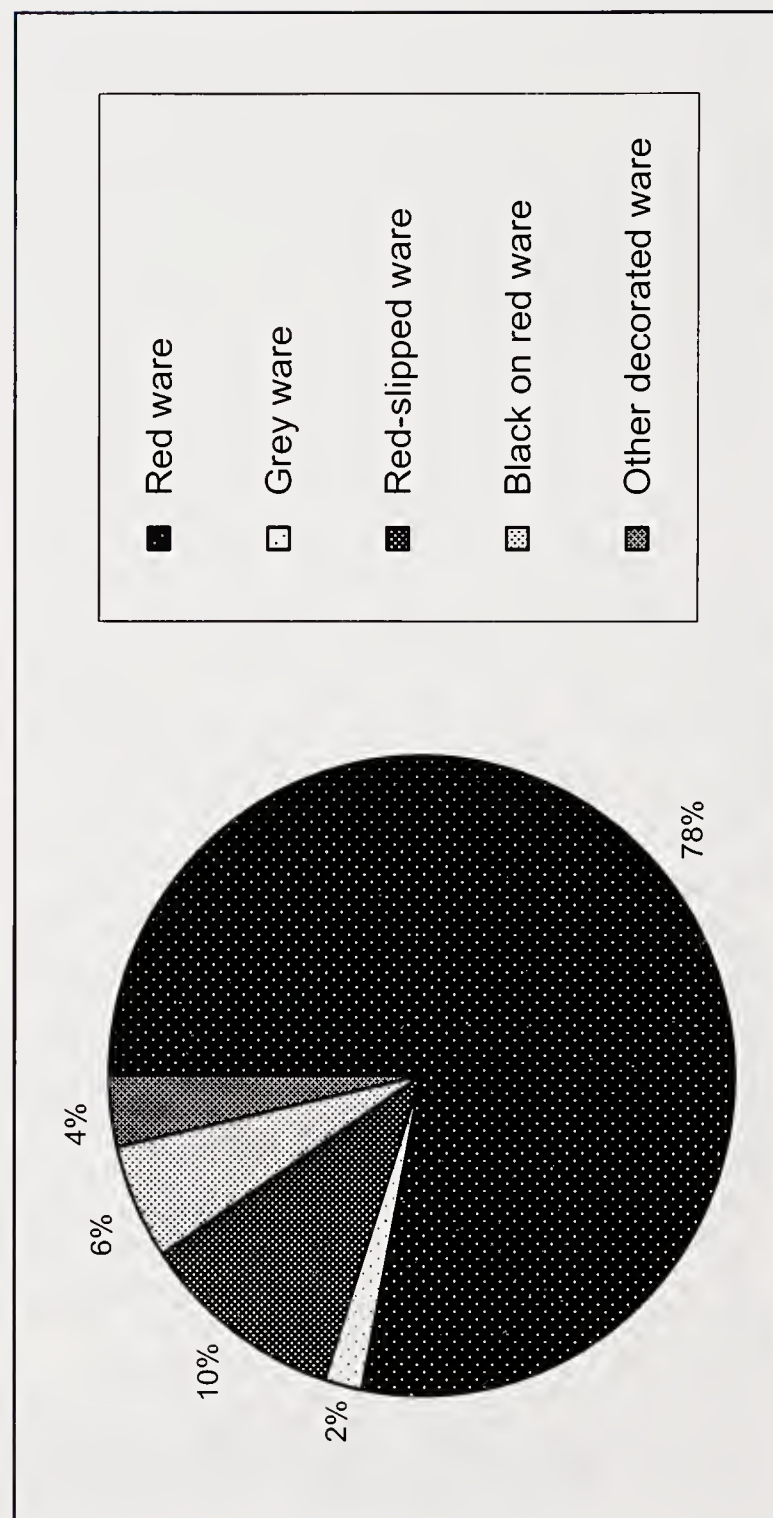


Fig. 7



11. Fragment of a vase with an out-turned, thickened externally bevelled rim, concave neck and expanding profile. Of medium fabric showing a semi oxidized core, it is devoid of any slip or wash.
12. Fragment of a vase with a splayed out, externally thickened and internally grooved rim, having internally carinated neck and expanding shoulder. Of medium fabric showing an unoxidized smoky core, it is treated with a deep red wash on the exterior.
13. Fragment of a vase with a beaded rim, concave neck and bulging profile. Of medium fabric showing an unoxidized smoky core, it is devoid of any slip or wash.
14. Fragment of a vase with a flat topped, externally slightly bevelled, under-cut rim, roughly vertical neck and carinated shoulder. Of medium fabric showing an oxidized core, it is treated with a wash.
15. Fragment of a vase with an out-turned, externally thickened rim and concave neck of medium fabric, showing an oxidized core, it is treated on the exterior with a wash.
16. Fragment of a vase with an out-turned externally thickened rim concave neck and carinated shoulder. Of medium fabric showing an oxidized brick-red core, it is treated with a wash on the exterior.
17. Fragment of a vase with a splayed out featureless rim, carinated neck and possibly a bulging profile. Of medium fabric showing unoxidized core, it is devoid of any slip or wash.
18. Fragment of a vase with a flaring externally thickened rim and concave neck. Of medium fabric showing a fully oxidized core, it is treated with a wash on the exterior.
19. Fragment of a jar with a beaked rim, internally carinated neck and mildly ledged shoulder. Of medium fabric and thick in section showing completely oxidized core, it is treated with a wash on the exterior.
20. Fragment of a vase with an out-curved, externally thickened grooved rim and vertical neck. Of medium fabric showing an unoxidized grey core it is treated with a wash.
21. Fragment of a jar with a beaked rim, concave neck, mildly carinated shoulder and globular body. Of medium fabric showing imperfectly oxidized core, it is treated with an ochre wash and decorated with a horizontal groove at the carination on exterior.
22. Fragment of a low necked jar with a beaked rim constricted neck and globular body. Of medium fabric showing semi-oxidized core, it is treated with a wash.
23. Fragment of a basin with a clubbed, drooping rim, grooved neck and rounded sides. Of medium fabric showing a perfectly oxidized core, it is treated with an ochre wash and decorated with a shallow horizontal groove below the neck on interior.
24. Fragment of a jar with an out-turned, externally thickened rim, internally carinated neck and expanding profile. Of medium fabric showing unoxidized core, it is treated with a wash on the exterior.
25. Fragment of a jar with a splayed out beaked rim short concave neck and mildly carinated grooved shoulder. Of medium fabric showing fully oxidized core, it is treated with a red wash.
26. Fragment of a deep basin with an externally clubbed rim having a horizontal groove below it and tapering sides. Of medium fabric showing an oxidized core, it is treated with a red wash and the interior is executed with two prefiring oblique incised lines.
27. Fragment of a beaker with an out-turned featureless rim and roughly straight sides. Of



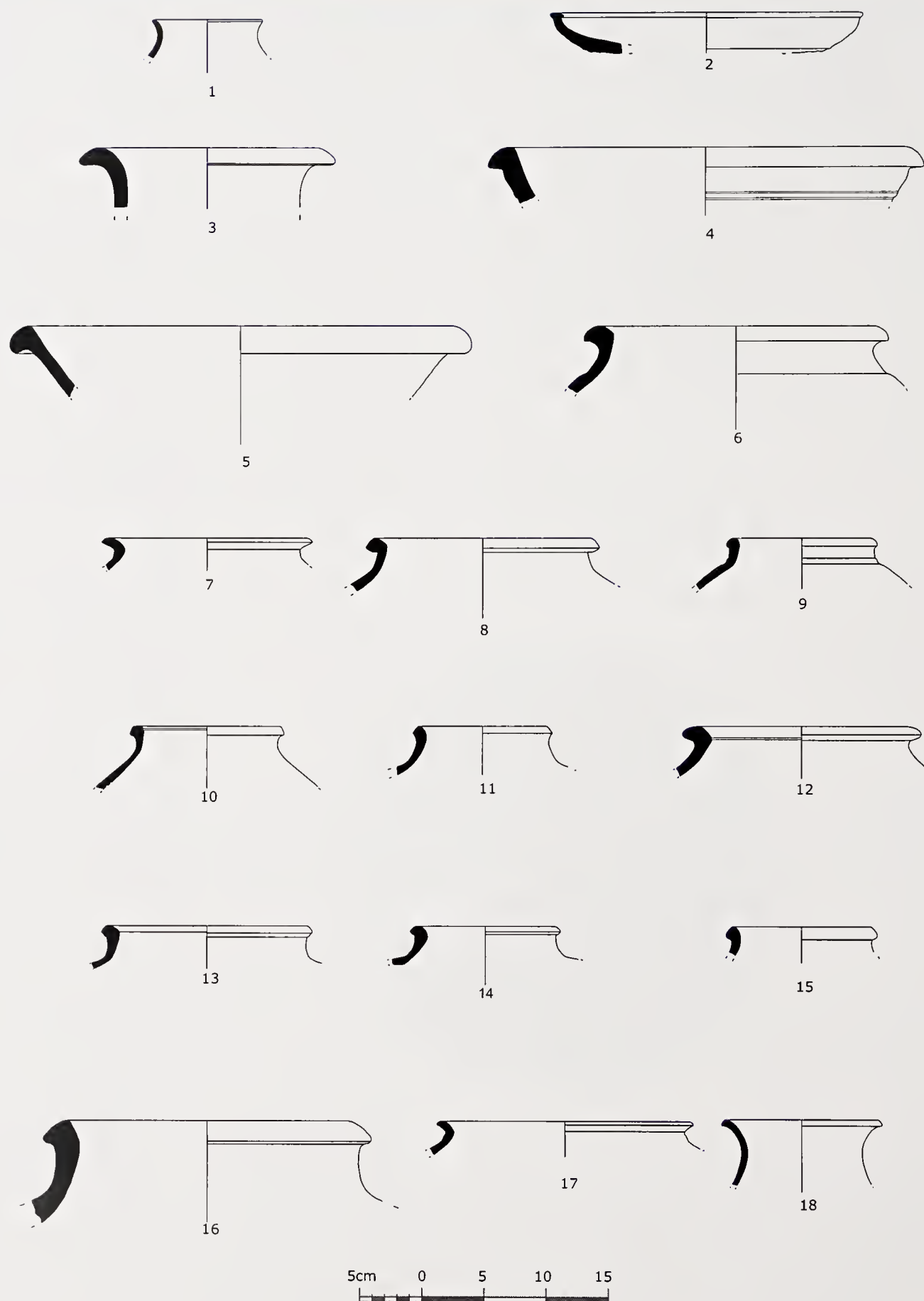


Fig. 8. Red ware (1-18)



- fine fabric showing an unoxidized grey core, it is treated with an ochre wash on the exterior.
28. Fragment of a dish with a flaring flanged rim and tapering sides. Of medium fabric showing a perfectly oxidized core, it is treated with a wash.
29. Fragment of a dish with a flaring, flanged rim with tapering sides. Of medium fabric showing a semi oxidized core, it is treated with an ochre wash and executed with grooves on the exterior.
30. Fragment of a dish with an externally clubbed rim and tapering sides. Of medium fabric showing an unoxidized core, it is devoid of any slip or wash.
31. Fragment of a dish with a drooping rim and tapering sides. Of medium fabric showing a perfectly oxidized core, it is treated with a red wash.
32. Fragment of a dish with a nail headed rim, tapering sides with wavy profile and sagger base. Of medium fabric showing fully oxidized core, it is treated with a red wash on the exterior.
33. Fragment of a flaring base of a dish-on-stand with a sharp upturned edge having a broad shallow groove above. Of medium fabric showing semi oxidized core, it is treated with a red wash on the exterior.
34. Fragment of splayed out base with a featureless edge of a dish-on-stand. Of medium fabric showing an oxidized core, it is treated with a wash on the exterior.
35. Fragment of a flaring base of a dish-on-stand with a featureless edge. Of medium fabric showing a fully oxidized brick-red core, it is treated with an ochre wash on the exterior.
36. Fragment of a jar with a vertical externally clubbed rim and a bluntly carinated neck. Of medium fabric showing an oxidized brick-red core, it is treated with a wash.
37. Fragment of a vase with an in-turned featureless rim and a prominent horizontal flange bearing a hole and ledged profile. Of medium fabric showing an oxidized core, it is treated with an ochre wash.
38. Fragment of a jar with a clubbed flat topped externally bevelled rim and concave neck. Of medium fabric showing a fully oxidized core, it is treated with a wash and painted in black with a horizontal rim band. A similar band is painted below the rim on the interior.
39. Fragment of a vase with an out-turned, externally bevelled rim, concave neck and globular body. Of medium fabric showing an unoxidized grey core, it is devoid of any slip or wash.
40. Fragment of a jar with a splayed out rim, roughly vertical neck and globular body. Of medium fabric showing an oxidized core, it is treated with an ochre wash.
41. Fragment of a jar with a flaring mouth everted rim and ribbed shoulder. Of medium fabric showing an oxidized brick-red core, it is treated with a red wash on the exterior.
42. Fragment of a dish of dish-on-stand, with a splayed rim and flaring sides. Of medium fabric showing a semi oxidized core, it is treated with an ochre wash and executed with a rib on the exterior below the rim.
43. Fragment of a vase with an out-turned featureless rim, carinated neck and bulging profile. Of fine fabric showing an oxidized brick-red core, it is treated with a red wash.
44. Fragment of a vase with an out-curved featureless rim, concave neck and globular profile, Of medium fabric showing an oxidized core, it is treated with a wash on the exterior.
45. Fragment of a dish with a folded rim and rounded profile. Of medium fabric showing



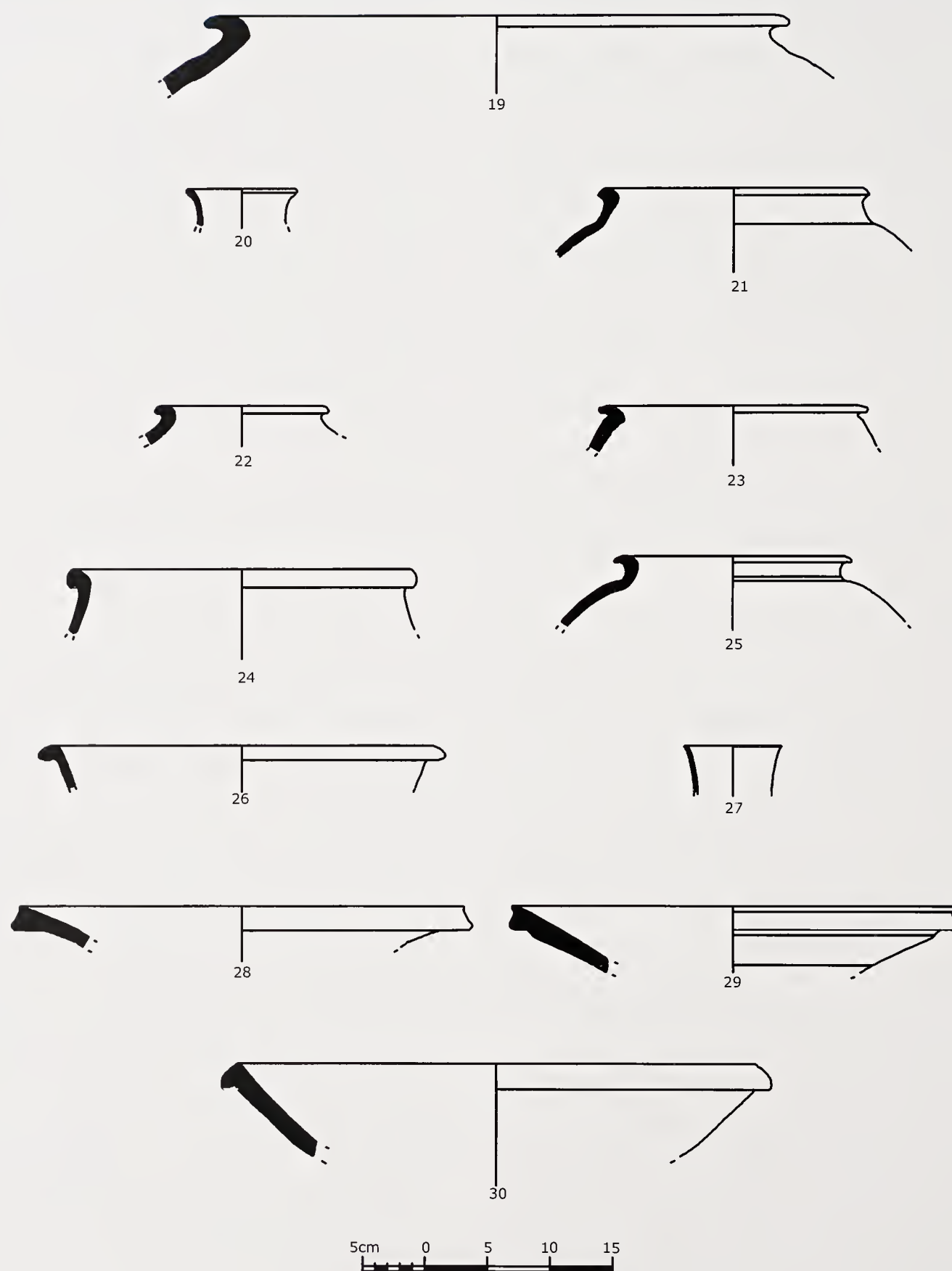


Fig. 9. Red ware (19-30)

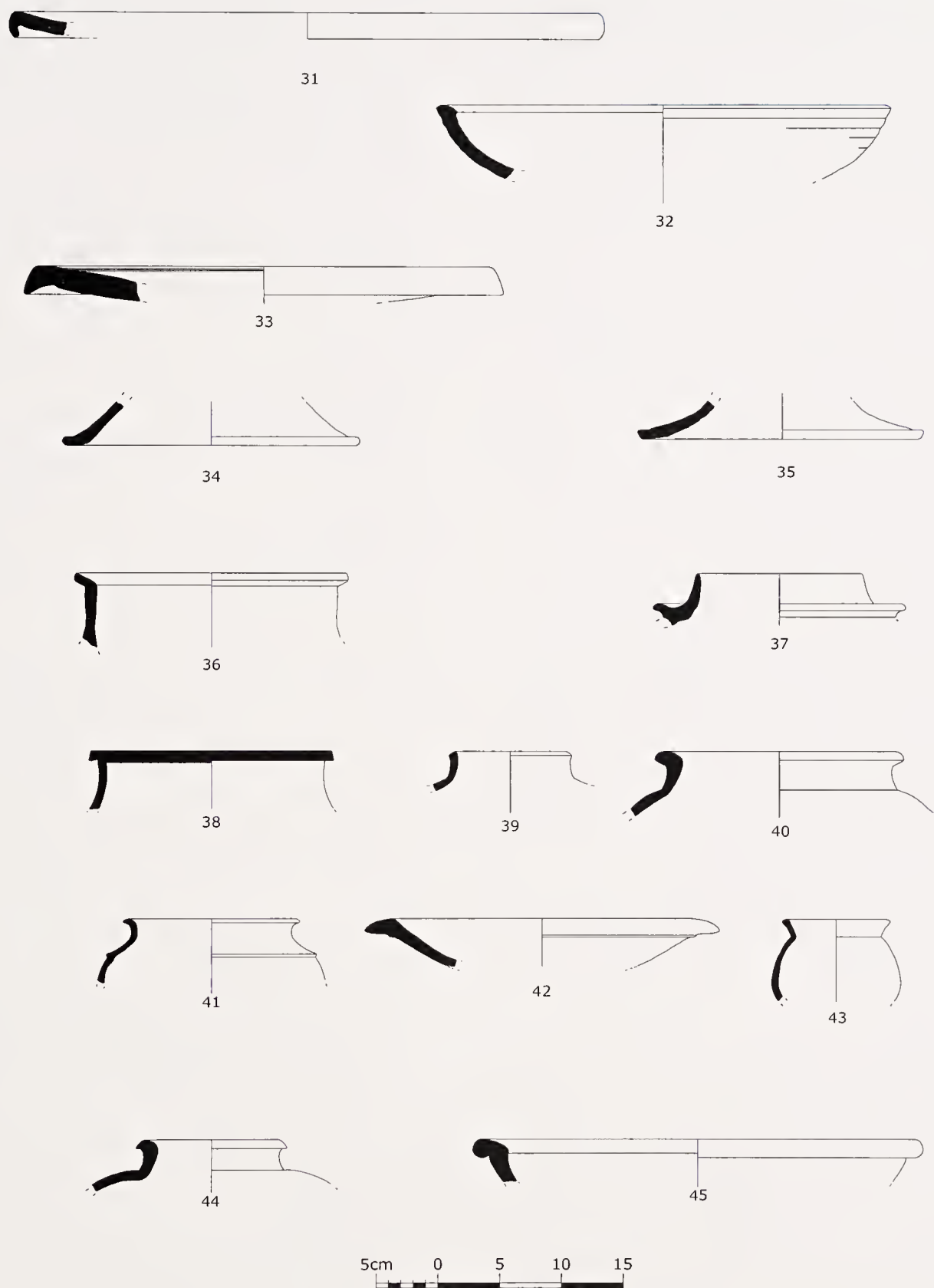


Fig. 10. Red ware (31-45)



an oxidized core, it is treated with an ochre colour wash.

46. Fragment of a deep bowl with a slightly in-turned, externally clubbed rim, carinated neck and expanding profile. Of medium fabric showing fully oxidized core it is treated with a wash.
47. Fragment of a deep bowl with horizontally splayed out rim, internally carinated neck and carinated waist. Of medium fabric showing fully oxidized core, it is treated with a wash on the exterior.
48. Fragment of a deep bowl with a slightly in-turned externally clubbed rim with expanding profile. Of fine fabric showing a fully oxidized core it is treated with a deep red wash on the exterior.
49. Fragment of a flaring base of a dish-on-stand with an up-turned-grooved edge. Of medium fabric showing semi-oxidized core, it is treated with an ochre wash on the exterior.
50. Fragment of a small, deep basin with a splayed rim, slightly carinated shoulder and rounded body. Of medium fabric showing a fully oxidized core, it is treated with an ochre wash.
51. Fragment of a trough with a flat base and tapering sides. Of coarse fabric, showing fully oxidized core, it is devoid of any slip or wash.
52. Fragment of a jar with a beaked rim, constricted neck and bulbous body having a prominent ridge below the grooved shoulder. Of medium fabric, showing fully oxidized core, it is treated with an ochre wash on the exterior and painted in black with a horizontal band over the rim and ridge.
53. Fragment of a trough with an externally clubbed rim and tapering sides. Of medium fabric, showing fully oxidized core, it is devoid of any slip or wash but decorated with

an incipient ridge below the neck, on the exterior.

54. Fragment of a basin with an externally clubbed rim, mildly carinated towards base and tapering side. Of medium fabric, showing a fully oxidized core, it is treated with a wash.
55. Fragment of a lid with a flared featureless rim with tapering sides. Of medium fabric, showing a semi oxidized core, it is treated with a reddish wash.
56. Fragment of a shallow basin with an internally bevelled rim and tapering sides. Of medium fabric, showing a semi-oxidized core, it is treated with a red wash.
57. Fragment of a squattish stand of a bowl with sloping sides ending in a beaked edge. Of medium fabric showing fully oxidized core, it is treated with a red wash.
58. Fragment of a cylindrical perforated jar with a flat disc base with a large perforation at the bottom. Of medium fabric showing a fully oxidized core, it is treated with an ochre wash.
59. Fragment of a perforated lid with a thickened rim and tapering sides. Of medium fabric, showing a fully oxidized core, it is treated with a deep red wash.
60. Fragment of a perforated lid with a flat topped rim. Of medium fabric, showing fully oxidized body, it is devoid of any slip or wash.

## **B. Red-slipped ware**

### **Figs. 12-14**

1. Fragment of a flaring base of a dish-on-stand with a featureless sharp outer edge. Of medium fabric showing a perfectly oxidized core, it is treated with a deep red slip on the exterior.

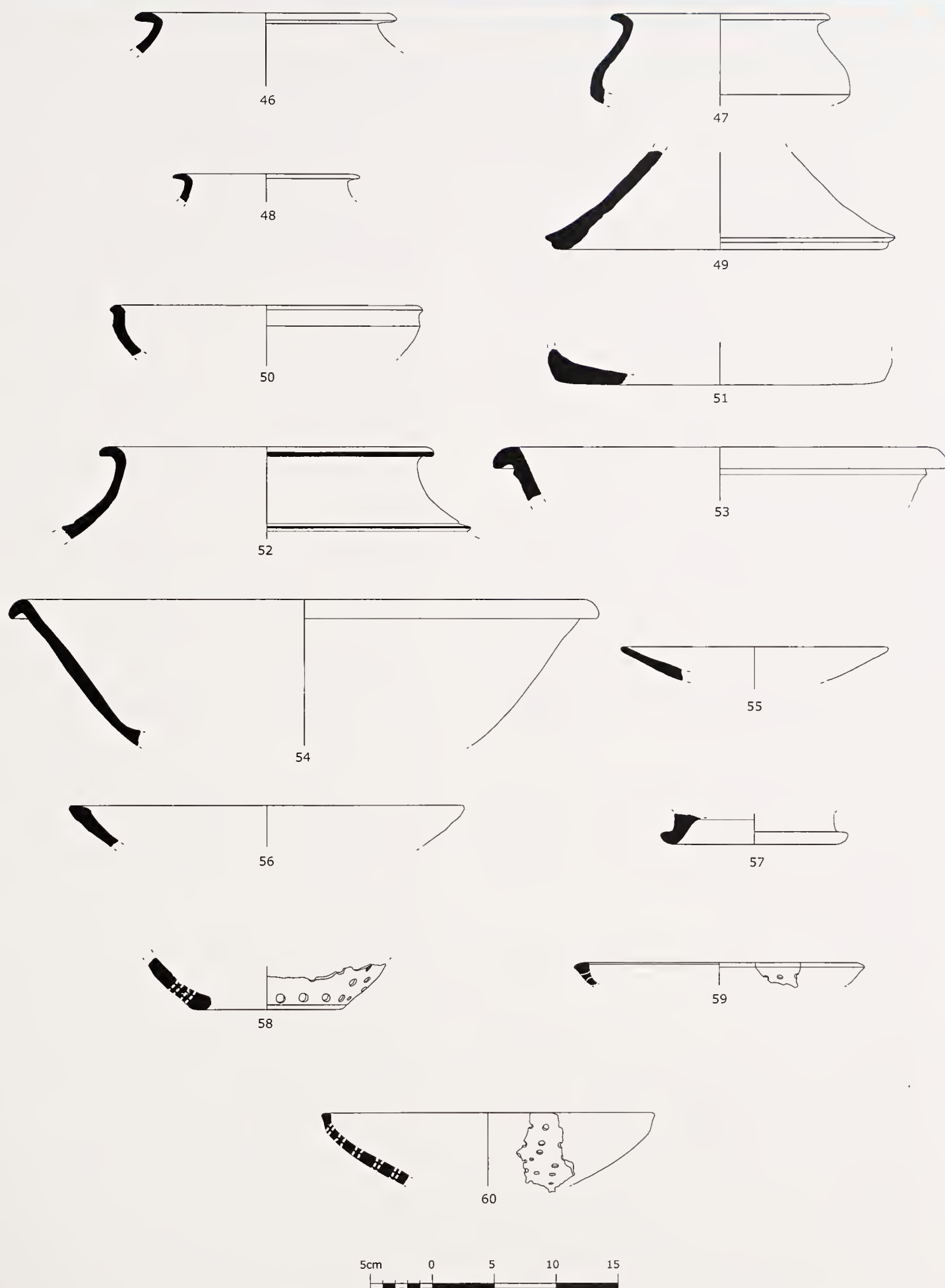


Fig. 11. Red ware (46-60)



2. Fragment of a flaring base of a dish-on-stand with a slightly raised edge. Of medium fabric showing an oxidized brick-red core, it is treated on the exterior with a deep red slip and painted with a black horizontal band on the outer edge.
3. Fragment of a flaring base of a dish-on-stand with a sharp, slightly up-turned edge. Of medium fabric showing an oxidized core, it is treated with a deep red slip on the exterior and painted with a black horizontal band on its outer edge.
4. Fragment of a flaring base of a dish-on-stand with a featureless edge. Of medium fabric showing an unoxidized core, it is treated with a deep red slip on the exterior and painted with a black horizontal band on outer edge.
5. Fragment of a flaring base of a dish-on-stand with a featureless sharp outer edge. Of medium fabric showing an oxidized core, it is treated with a deep red slip on the exterior and painted with a black horizontal band on outer edge.
6. Fragment of a shallow dish having a splayed out featureless rim with a sharply carinated profile and flat base. Of medium fabric showing a fully oxidized core, it is treated with a deep red slip.
7. Fragment of a basin with an out-turned undercut rim and tapering sides. Of medium fabric showing a perfectly oxidized core, its interior is treated with a deep red slip and decorated with an incised line below neck and painted in black with thick band on waist. A similar band is painted over the rim.
8. Fragment of a shallow dish with an internally beaked, short collared rim carinated for a flat base. Of medium fabric showing an oxidized core, it is treated internally with a deep red slip spilling over the rim.
9. Fragment of a shallow dish with an internally thickened, externally grooved rim, slightly tapering sides carinated externally for a flat base. Of medium fabric showing an oxidized core, it is treated with a deep red slip.
10. Fragment of a dish with a beaked under-cut rim and tapering sides. Of medium fabric showing an oxidized core, it is treated with a deep red slip on the interior spilling over the rim and painted in with two horizontal black bands on the rim.
11. Fragment of a dish with an externally clubbed rim and tapering sides. Of medium fabric showing an oxidized core, it is treated with a deep red slip on the interior and over the rim.
12. Fragment of a jar with a beaked rim, carinated neck and bulbous body. Of medium fabric showing an oxidized brick-red core, it is treated with a dark red slip and painted with black bands, one each at the outer edge of the rim and below the neck on the interior.
13. Fragment of a small goblet with a string-cut, disc base and mildly carinated waist. Of medium fabric showing an oxidized core, it is treated with a red slip on the outside and painted with a black horizontal band above carination.
14. Fragment of a vase with an out-turned featureless rim and a short concave, internally grooved neck. Of medium fabric showing a fully oxidized core, it is treated with a deep red slip on outside and painted with a black horizontal rim band.
15. Fragment of a vase with an out-curved sharpened rim, concave neck and bulging profile. Of medium fabric showing an oxidized core, it is treated with a dark red slip on the outside and painted with a horizontal rim band.

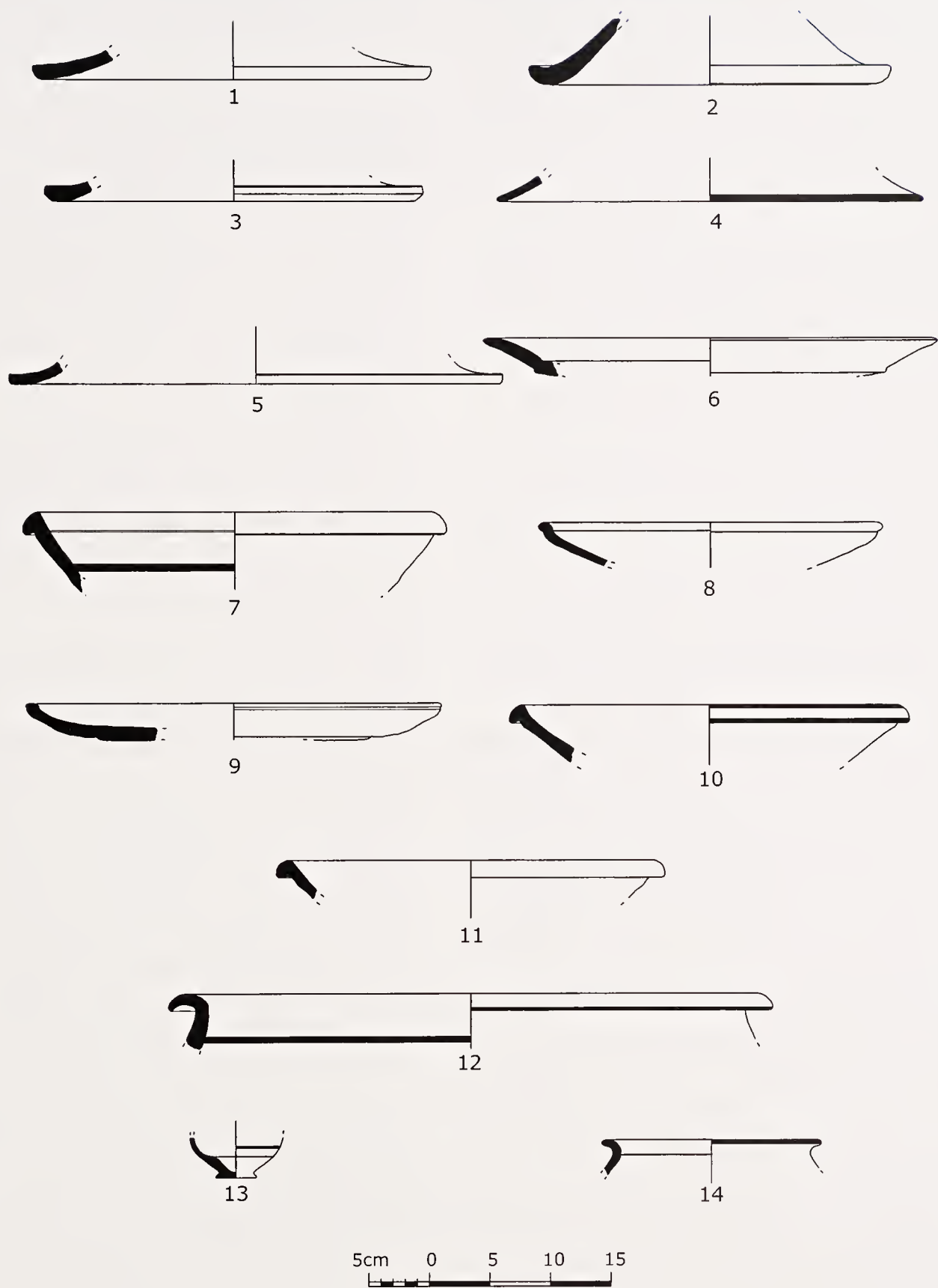


Fig. 12. Red-slipped ware (1-14)



16. Fragment of a vase with an out-turned featureless rim, concave neck and expanding profile. Of medium fabric showing a fully oxidized core, it is treated with a dark red slip on the exterior extending over the rim and the rim top is painted with a black horizontal band.
17. Fragment of a vase with an out-turned, externally thickened rim, roughly concave neck and mildly carinated shoulder having a bulging profile on the exterior and wavy profile on the interior. Of medium fabric showing an oxidized brick-red core, it is treated with a red slip on the exterior.
18. Fragment of a basin with an externally bevelled, under-cut rim and tapering sides. Of medium fabric showing a semi oxidized core it is treated with a chocolate slip.
19. Fragment of a jar with a beaked rim, internally carinated neck and bulbous body. Of medium fabric showing a semi oxidized core, it is treated with a bright red slip.
20. Fragment of a jar with an externally clubbed rim, concave neck and mildly carinated grooved shoulder and bulging profile. Of medium fabric showing an oxidized core, it is treated with a red slip on the outside.
21. Fragment of a jar with an externally clubbed rim, carinated neck and bulbous body. Of medium fabric showing an unoxidized core, it is treated with a bright red slip on the outside extending up to shoulder on the inside over the rim. It is painted in black with a horizontal band at rim and a similar band on the interior.
22. Fragment of a low necked jar with a splayed out beaked rim, internally carinated neck and bulging profile. Of medium fabric showing an oxidized core, it is treated with a dark red slip and painted with a black horizontal band below the neck on the interior.
23. Fragment of a jar with an externally clubbed, beaked rim and expanding shoulder. Of medium fabric showing an oxidized core, it is treated with a bright red slip on the outside spilling over the rim and its exterior is painted in black with horizontal bands on the rim and shoulder.
24. Fragment of a vase with an out-turned, under-cut rim, concave neck and globular body. Of medium fabric showing a fully oxidized core, it is treated with a bright red slip enclosed on the exterior between a sharp ridge at the shoulder and the rim.
25. Fragment of a jar with a short projected rim, internally carinated neck and expanding profile. Of medium fabric showing an unoxidized smoky core, it is treated with a red slip on the outside and painted with a black horizontal rim band.
26. Fragment of a jar with a splayed out beaked rim, concave neck and bulging profile. Of medium fabric showing an oxidized core, it is treated with a chocolate slip on the exterior.
27. Fragment of a jar with a splayed out beaked rim, internally carinated neck and expanding shoulder. Of medium fabric showing an oxidized core, it is treated with a purplish slip on both sides while the interior is painted in black with a horizontal band on shoulder.
28. Fragment of a jar with a splayed out, drooping rim, internally carinated neck and expanding shoulder. Of medium fabric showing an unoxidized grey core, it is treated with a light chocolate slip and decorated with a horizontal groove on the interior.
29. Fragment of a jar with a beaked rim, carinated neck and expanding profile. Of medium fabric, showing an oxidized smoky grey core, it is treated with a red slip and painted in black with multiple bands on rim and on the shoulder.

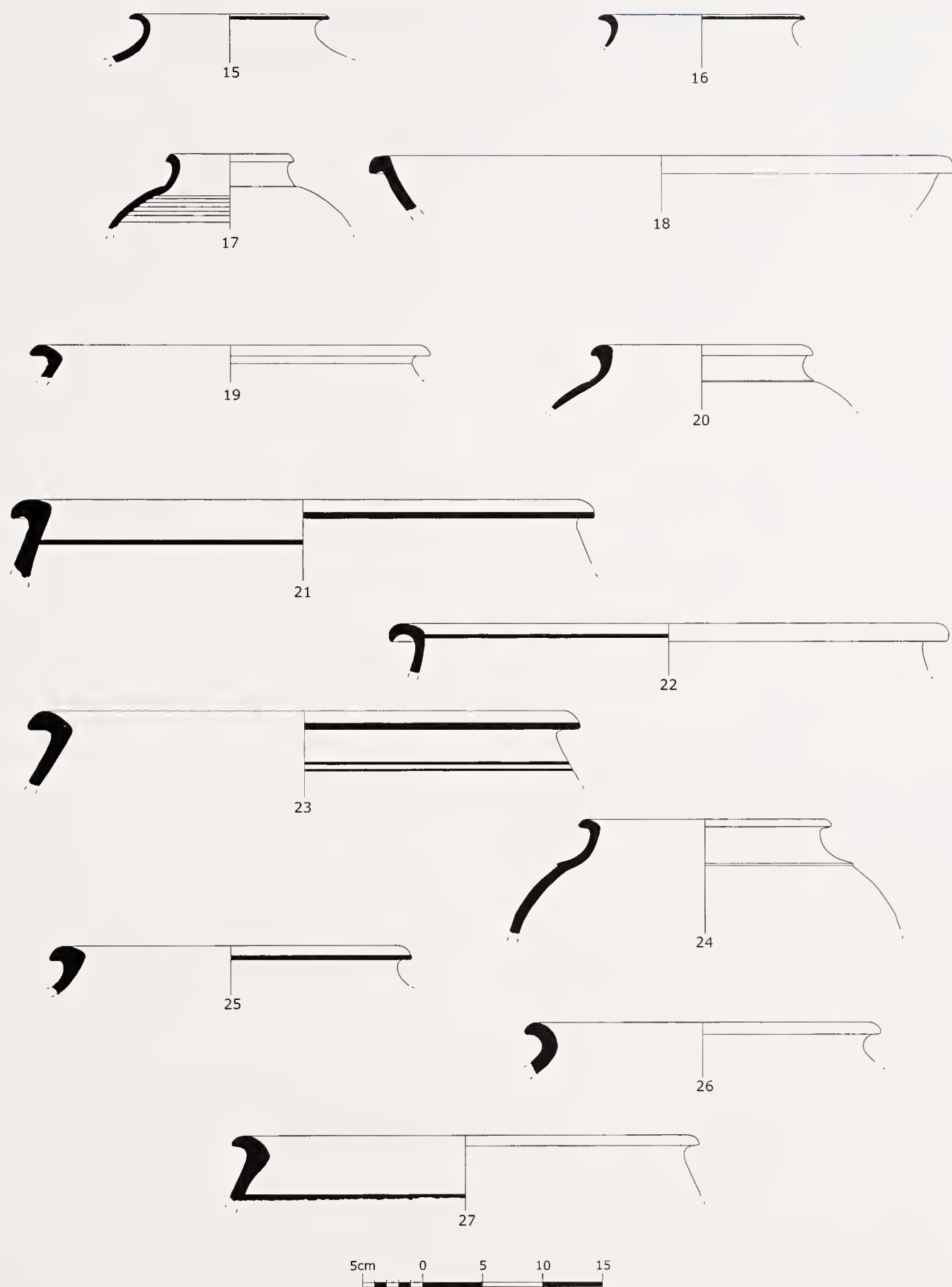


Fig. 13. Red-slipped ware (15-27)



30. Fragment of a vase with an out-curved featureless rim, concave neck and expanding shoulder. Of medium fabric showing an oxidized core, it is treated with a bright red slip on the outside and over the rim and painted with a black rim band.
31. Fragment of a dish with an externally clubbed, under-cut rim and tapering sides. Of medium fabric showing an oxidized core, it is treated with a bright red slip on the interior and over the rim and painted in black with a horizontal rim band.
32. Fragment of shallow dish having a beaked rim and rounded profile. Of medium fabric showing an oxidized core, it is treated with a buff slip and painted with a black rim band.
33. Fragment of a vase with an out-turned, elliptical collared rim, concave neck and a bulging profile. Of medium fabric showing an oxidized core, it is treated with a bright red slip on the exterior and painted in black with a rim band and two horizontal broad bands at shoulder.
34. Fragment of a dish with an externally clubbed rim and tapering sides. Of medium fabric, showing an oxidized core, it is slipped on the inside and painted with a black band on the internal edge of the rim and a similar band on the interior.
35. Fragment of a low necked jar with a splayed out, beaked rim and globular profile. Of medium fabric showing an oxidized core, it is treated with an ochre slip and painted in black with a rim band.
36. Fragment of a low-necked jar with a beaked rim, internally carinated neck and bulging profile. Of medium fabric showing a perfectly oxidized core, it is treated with an ochre slip on the outside and painted in black with a horizontal band.
37. Fragment of a flaring base of a dish on stand with slightly raised edges. Of medium fabric showing an oxidized core, it is treated with a red slip and painted in black with a horizontal band at the outer edge and executed with a deep groove at the inner edge.
38. Fragment of a dish with a ring base. Of medium fabric showing an oxidized core, its interior is painted in black with two concentric circles over a bright red slip.
39. Fragment of a dish with a flat base having carinated splayed out sides. Of medium fabric showing an oxidized core, it is treated with a bright red slip and painted in black on the outside with a horizontal band above carination.
40. Fragment of a vase with an out-curved sharpened rim, concave neck and carinated profile. Of medium fabric showing a semi-oxidized core, its upper portion is treated on the exterior with a bright red slip from rim to the carination and executed with a ridge on the shoulder, corresponding to carination on the interior.

### C. Black on red ware

#### Pls. XX -XXIV

1. Fragment of a dull red ware. Of medium fabric showing an oxidized core, it is painted in black over self slipped exterior with two horizontal bands and a series of double loops. A trace of similar band is found below.
2. Fragment of a dish of red ware with a splayed featureless rim. Of medium fabric showing an oxidized brick-red core, it is painted in black over a bright red slip with *pipal* branches having hatched leaves.
3. Fragment of a red ware painted in black on the outside over a bright red slip with a row of running arches bordered below

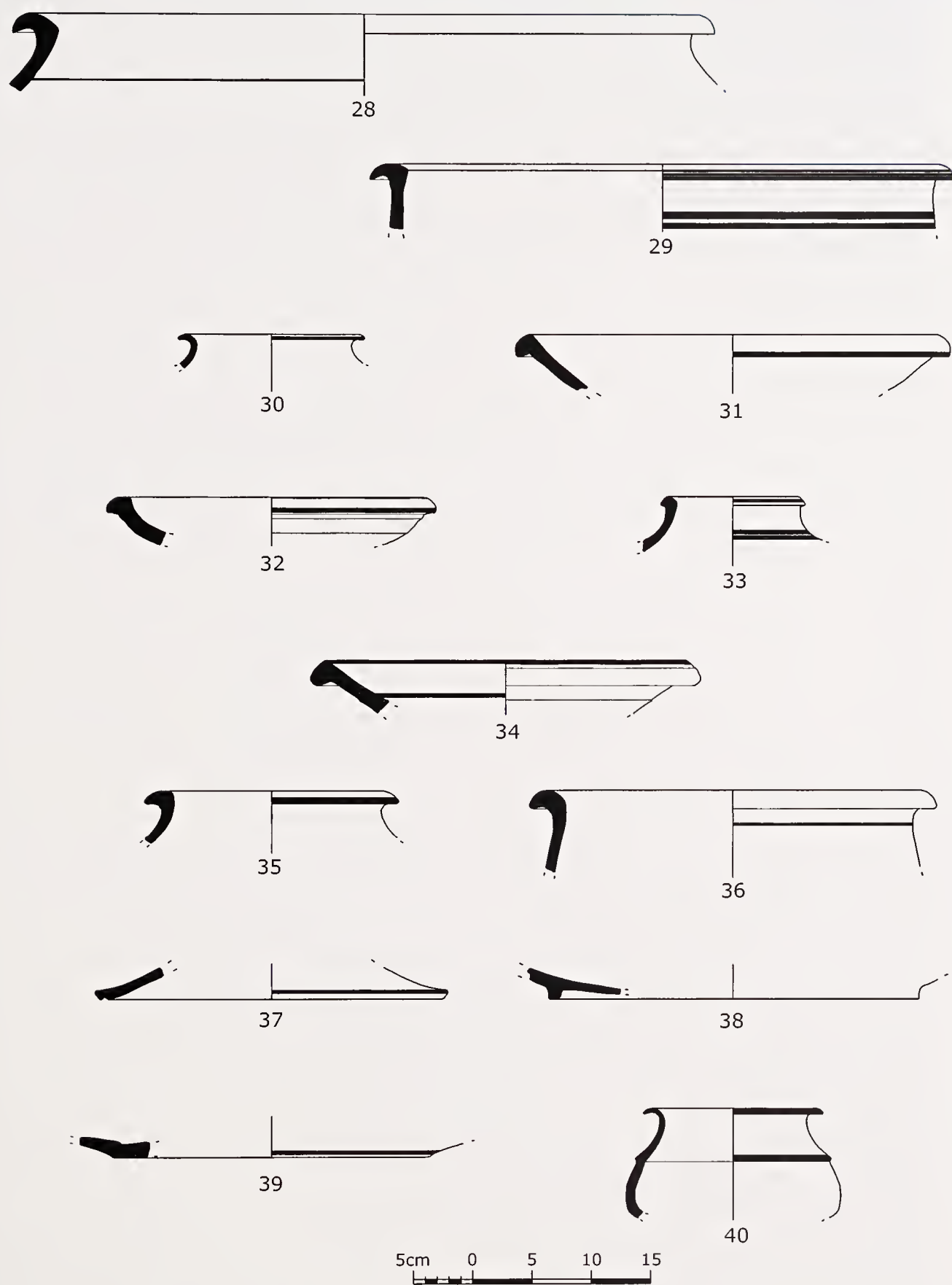


Fig. 14. Red-slipped ware (28-40)



with two horizontal bands. The arch is depicted with a sun motif consisting of a central dot with two concentric circles, the outer one having radiating lines. Of medium fabric, it has an unoxidized grey core.

4. Fragment of an upper portion of a vase of red ware with a carinated shoulder. Of medium fabric showing an oxidized core, it is painted in black on the exterior over a red slip with a row of encircled dots bordered below and above with horizontal lines, above a panel of crescents enclosed between horizontal lines. Below is a criss-cross pattern empanelled between horizontal lines.
5. Fragment of flaring base of a dish-on-stand of red ware with slightly raised edges. Of medium fabric showing an oxidized brick-red core, its self-slipped exterior is painted in black with horizontal rows of palm frondes.
6. Fragment of an upper portion of a vase of red ware. Of medium fabric showing an oxidized core, it is painted in black over self slipped exterior with a criss-cross pattern bordered on the top with a horizontal line, below a wavy line suspended from three horizontal lines. Above is painted with a broad band.
7. Fragment of a middle portion of a vase of red ware. Of medium fabric showing a fully oxidized core, it is painted in black over a deep red slip with rows of leaves and other fragmentary pattern.
8. Fragment of a middle portion of a vase of red ware. Of medium fabric showing a fully oxidized core, it is painted in black over a chocolate slipped exterior with multiple horizontal bands with palm tree and frondes.
9. Fragment of a dish of red ware with a splayed featureless rim. Of medium fabric showing an oxidized core, it is painted in black over a bright red slip with a *pipal* branch having hatched leaves.
10. Fragment of a red ware painted in black on the outside over a bright red slip with hatched banana leaves generated from the stem. Of medium fabric, it has a semi oxidized core.
11. Fragment of a middle portion of a vase of red ware. Of medium fabric showing an oxidized core, it is painted in black over a chocolate slipped exterior with horizontal bands and indeterminate pattern.
12. Fragment of an upper portion of a vase of red ware. Of medium fabric, showing an oxidized core, it has a self slipped interior and painted in black on the outside with horizontal wavy lines bordered on the top by two horizontal bands.
13. Fragment of a stem of dish-on-stand, painted in black on the exterior over a bright red slip with horizontal rows of palm frondes. Of medium fabric, it has an oxidized core.
14. Fragment of an upper portion of a vase of red ware. Of medium fabric showing an oxidized core, it is painted in black over a bright red slip on the exterior with a row of filled circles, enclosed between horizontal lines above a fish-scale pattern bordered on the top with three horizontal lines.
15. Fragment of a middle portion of a vase of red ware. Of medium fabric showing a perfectly oxidized core, it is painted in black on a dark red slip with four panels, separated each by a horizontal line and bordered below by two horizontal bands. The lower panel is painted with a row of circle-and-dots below two panel of rising suns and indeterminate design. The upper part is painted with other fragmentary patterns.
16. Fragment of a lower portion of a goblet with a string cut flat base and treated with red-





Pl. XX. Tarkhanewala-Dera : Black on red ware. See pp. 62, 64





Pl. XXI. Tarkhanewala-Dera : Black on red ware. See p. 64



- chocolate slip. Its exterior is painted in black with vertical wavy lines. Of medium fabric, it has an oxidized core.
17. Fragment of a bowl of red ware with a slightly incurved rim, horizontally flanged waist and internally carinated sides. Of medium fabric showing a semi oxidized smoky grey core, it is treated with a bright red slip and painted in black with a horizontal row of slanting strokes, bordered below by a thin band and criss-cross pattern.
  18. Fragment of an upper portion of a jar of red ware. Of medium fabric showing an unoxidized smoky core, its self-slipped exterior is painted in black with groups of horizontal wavy lines segmented with three vertical lines, bordered on the top with a thin and a broad horizontal band.
  19. Fragment of an upper portion of a vase of red ware. Of medium fabric showing an oxidized brick-red core, its ochre washed exterior is painted in black with two horizontal lines above two horizontal wavy lines.
  20. Fragment of an upper portion of a red ware, it is painted in black with criss-cross pattern bordered above with horizontal lines, over a dark red slip. Of medium fabric, it has an oxidized core.
  21. Fragment of a red ware exterior of which is treated with a buff slip and painted in black with two groups of converging oblique lines. Of medium fabric, it has an unoxidized portion in the lower section of the core.
  22. Fragment of a drab ware painted in black over the washed surface with a group of horizontal wavy lines joined at one end, between a horizontal band on the top and arch below. Of medium fabric, it has a perfectly oxidized brick-red core.
  23. Fragment of an upper portion of a vase of red ware. Of medium fabric showing a fully oxidized core, its exterior is treated with a dark red slip and painted in black with branches and hatched leaves and other fragmentary patterns.
  24. Fragment of a dish with splayed featureless rim. Of medium fabric showing an oxidized core, it is treated with a red slip and painted in black with a rim band and a group of wavy lines generated from a vertical stroke and other indeterminate patterns.
  25. Fragment of a red ware, exterior of which is treated with a dark red slip and painted in black with cross hatched pattern, enclosed between two lines and other fragmentary designs. Of medium fabric, it has an oxidized core.
  26. Fragment of a red ware, exterior of which is treated with a dark red slip and painted in black with a group of horizontal lines. Of medium fabric, it has an oxidized core.
  27. Fragment of a dull red ware painted in black over self slipped exterior with a cross-hatched chevron bottom of which is overlapped with a thick horizontal band followed by another. Of medium fabric, it has an unoxidized smoky grey core.
  28. Fragment of a red ware painted in black on the outside over a bright red slip with two fish motifs having hatched body adjacent to an indeterminate pattern. Of medium fabric, it has an oxidized core.
  29. Fragment of a middle portion of a vase of red ware exterior of which is treated with a bright red slip and painted in black with designs resembling fish-scales. Of medium fabric, it has an oxidized core.
  30. Fragment of a red ware painted in black on the outside over a dark red slip with indeterminate pattern consisting of weeds, flower (a central dot in circle having radiating lines) with a stem and leaves. Of medium fabric, it has an oxidized core.





Pl. XXI. Tarkhanewala-Dera : Black on red ware. See p. 64



chocolate slip. Its exterior is painted in black with vertical wavy lines. Of medium fabric, it has an oxidized core.

17. Fragment of a bowl of red ware with a slightly incurved rim, horizontally flanged waist and internally carinated sides. Of medium fabric showing a semi oxidized smoky grey core, it is treated with a bright red slip and painted in black with a horizontal row of slanting strokes, bordered below by a thin band and criss-cross pattern.
18. Fragment of an upper portion of a jar of red ware. Of medium fabric showing an unoxidized smoky core, its self-slipped exterior is painted in black with groups of horizontal wavy lines segmented with three vertical lines, bordered on the top with a thin and a broad horizontal band.
19. Fragment of an upper portion of a vase of red ware. Of medium fabric showing an oxidized brick-red core, its ochre washed exterior is painted in black with two horizontal lines above two horizontal wavy lines.
20. Fragment of an upper portion of a red ware, it is painted in black with criss-cross pattern bordered above with horizontal lines, over a dark red slip. Of medium fabric, it has an oxidized core.
21. Fragment of a red ware exterior of which is treated with a buff slip and painted in black with two groups of converging oblique lines. Of medium fabric, it has an unoxidized portion in the lower section of the core.
22. Fragment of a drab ware painted in black over the washed surface with a group of horizontal wavy lines joined at one end, between a horizontal band on the top and arch below. Of medium fabric, it has a perfectly oxidized brick-red core.
23. Fragment of an upper portion of a vase of red ware. Of medium fabric showing a fully oxidized core, its exterior is treated with a dark red slip and painted in black with branches and hatched leaves and other fragmentary patterns.
24. Fragment of a dish with splayed featureless rim. Of medium fabric showing an oxidized core, it is treated with a red slip and painted in black with a rim band and a group of wavy lines generated from a vertical stroke and other indeterminate patterns.
25. Fragment of a red ware, exterior of which is treated with a dark red slip and painted in black with cross hatched pattern, enclosed between two lines and other fragmentary designs. Of medium fabric, it has an oxidized core.
26. Fragment of a red ware, exterior of which is treated with a dark red slip and painted in black with a group of horizontal lines. Of medium fabric, it has an oxidized core.
27. Fragment of a dull red ware painted in black over self slipped exterior with a cross-hatched chevron bottom of which is overlapped with a thick horizontal band followed by another. Of medium fabric, it has an unoxidized smoky grey core.
28. Fragment of a red ware painted in black on the outside over a bright red slip with two fish motifs having hatched body adjacent to an indeterminate pattern. Of medium fabric, it has an oxidized core.
29. Fragment of a middle portion of a vase of red ware exterior of which is treated with a bright red slip and painted in black with designs resembling fish-scales. Of medium fabric, it has an oxidized core.
30. Fragment of a red ware painted in black on the outside over a dark red slip with indeterminate pattern consisting of weeds, flower (a central dot in circle having radiating lines) with a stem and leaves. Of medium fabric, it has an oxidized core.





Pl. XXII. Tarkhanewala-Dera : Black on red ware. See pp. 64, 67





Pl. XXIII. Tarkhanewala-Dera : Black on red ware. See p. 67



31. Fragment of a red ware treated with a bright red slip and painted in black on the exterior with palm frondes. Of medium fabric, it has an unoxidized portion in mid-section of the core.
32. Fragment of a red ware painted in black on the exterior over a buff slip with hatched leaves. Of medium fabric, it has an oxidized core.
33. Fragment of a red ware. Of medium fabric showing an oxidized core, painted in black on the exterior over a bright red slip with thick vertical wavy lines.
34. Fragment of a vase of red ware with an everted rim. Of medium fabric showing an oxidized core, it is treated with a wash and painted on the interior with triple loops below a broad black horizontal rim band.
35. Fragment of a red ware painted in black on the exterior over a bright red slip with hatched banana leaves generated from the stem. Of medium fabric, it has an oxidized brick-red core.
36. Fragment of a featureless splayed (?) rim of a dish. Of medium fabric showing a semi oxidized smoky core, it is treated with a bright red slip, painted in black on the inside with criss-cross pattern bordered above and below by horizontal bands above which is painted with roughly vertical strokes generated from the rim band.
2. Fragment of a dish on stand with a splayed featureless rim. Of fine fabric showing a reduced grey core, it is treated with a dark slip on the interior.
3. Fragment of a vase with an out-turned, externally thickened, under-cut rim and concave neck. Of fine fabric showing a reduced grey core, it is treated with a black slip on both inside and outside.
4. Fragment of an upper portion of a vase with a out-turned rim (broken), concave neck and expanding profile. Of medium fabric showing a semi-oxidized grey core, it has a self slipped exterior.
5. Fragment of a middle portion of a bowl with inturned, bluntly carinated sides. Of fine fabric showing a reduced grey core, it is devoid of any slip or wash.

#### **E. Other decorated ware**

#### **Pl. XXV**

1. Fragment of a middle portion of a vase of red ware. Of medium fabric showing an oxidized brick-red core, its self slipped exterior is decorated with horizontal grooves below a group of incised wavy lines.
2. Fragment of a red ware. Of medium fabric showing a semi oxidized core, interior of which is decorated with deep incised intersecting strokes.
3. Fragment of a dish of red ware with a flat base. Of medium fabric showing an oxidized core, its self slipped interior is treated with multiple shallow concentric grooves in the bottom.
4. Fragment of a basin of red ware with an externally clubbed rim and tapering sides. Of medium fabric showing an oxidized core, its interior is decorated with deep incised herring bone pattern.

#### **D. Grey ware**

#### **Fig. 15**

1. Fragment of a low-necked vase with a flat-topped, thickened, out-turned rim, carinated shoulder and bulging sides. Of medium fabric showing a fully reduced grey core, it has a self slipped exterior.





Pl. XXIV. Tarkhanewala-Dera : Black on red ware. See pp. 67, 70



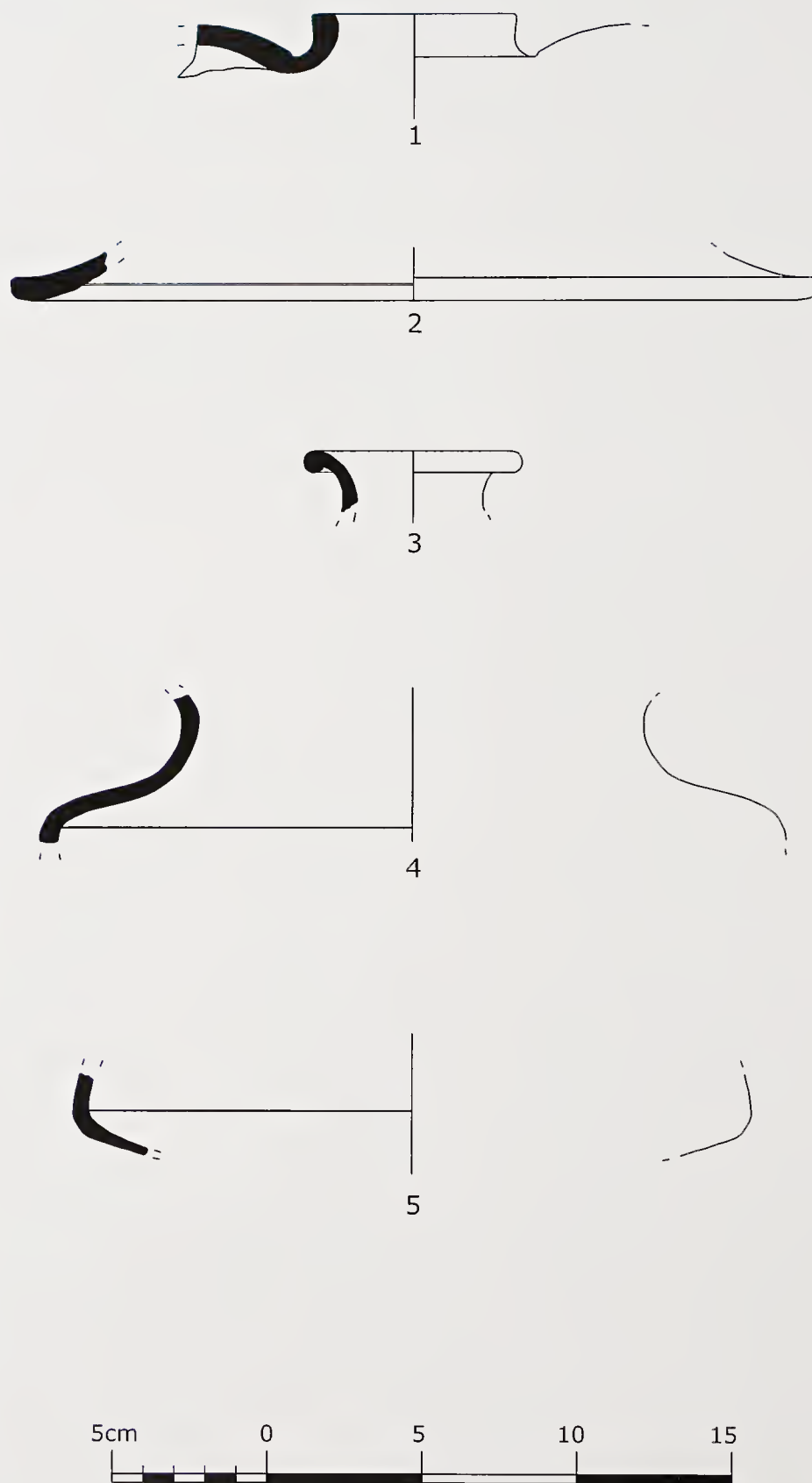


Fig. 15. Grey ware

5. Fragment of a basin of red ware. Of medium fabric showing a fully oxidized core, its interior is decorated with deep incised herring bone pattern.
6. Fragment of a middle portion of a basin with tapering sides. Of medium fabric showing a semi-oxidized core, its interior is decorated with deep incised slanting strokes, enclosed within horizontal grooves.

#### 4. OTHER FINDS

##### A. BLADES

Forty-five parallel-sided chert blades in fragmentary state, nine bladelets and one core were recovered. Presumably they were imported from Bukkar (Pakistan), a major site of Harappan blade industry in this region, downstream the Indus and enroute Rohri to the key sites like Kalibangan and its neighbourhood, transported by boats plying the Nara-Hakra-Ghaggar.<sup>1</sup> Prepared by crested ridge guiding technique, they served as domestic pen-knives and sickle blades. Kenoyer has suggested that in the Indus Valley a unique technique called inverse indirect percussion was developed. "This procedure is perhaps the most efficient technique for chert-knapping. A wooden stake with an antler tip is set in the ground, and the core is held at a specific angle against the stake. In this technique, the core is struck and pushed against the pointed stake, which is firmly set in the ground. One sharp blow against the core from a wooden or another hammer can quickly detach a long, parallel-sided blade and without much effort, additional blades can be removed in quick succession. This technique, which may have

been invented during the Upper Palaeolithic period in South Asia was used during the later Indus period, probably with a copper or bronze pointed stake".<sup>2</sup>

##### Fig. 16; pl. XXVI

1. Parallel-sided long blade bearing a sharp cutting edge; shows trapezoidal section with broken ends. The slightly curved distal end is narrower than the proximal end.  
From layer no. 3 (Reg. no. 314).
2. Parallel-sided blade used as a penknife or sickle blade shows a trapezoid transverse section. It has retained bulb of percussion and striking platform at the proximal end.  
From layer no. 1 (Reg. no. 222).
3. Parallel-sided blade broken at either end shows a trapezoidal transverse section, its one edge has been retouched while the other retains unused margin.  
From layer no. 1 (Reg. no. 287).
4. Parallel-sided blade retaining a striking platform and bulb of percussion broken at the distal end. It shows chipped margins and trapezoid transverse section.  
From layer no. 1 (Reg. no. 63).
5. Parallel-sided blade with both the margins chipped due to overuse, has a trapezoidal transverse section. It is broken at the bulbar portion and shows an incurved tapering distal end presumably due to conical shape of the core.  
From layer no.1 (Reg. no. 369).
6. Parallel-sided blade has both margins retouched. It has a trapezoidal transverse section and is broken at both the ends.  
From layer no.1 (Reg. no. 134).

<sup>1</sup> S.P.Gupta, 'Internal Trade of the Harappans' *Frontiers of the Indus Civilization* (New Delhi, 1984), pp.419-420, fig.43.1; also Jonathan Mark Kenoyer, *Ancient Cities of the Indus Valley Civilization*, American Institute of Pakistan Studies, Oxford University Press (Delhi, 1998), fig.5.20 a.

<sup>2</sup> Kenoyer, *op.cit.*, p.34.





Pl. XXV. Tarkhanewala-Dera : Other decorated ware. See pp. 70, 73



7. Parallel-sided blade bearing close retouching on one margin whereas the other edge is left plain. It has a triangular transverse section and is broken at both the ends.  
From layer no. 1 (Reg. no. 66).
8. Parallel-sided blade with trapezoidal transverse section displays razor sharp margins and a narrow curve at the distal end.  
From layer no.3 (Reg. no. 379).
9. Minutely retouched parallel-sided flake with trapezoid transverse section broken at both the ends.  
From layer no. 1 (Reg. no. 356).
10. Parallel-sided blade with one margin retouched and broken at both the ends. It has a trapezoid transverse section and retained bulb of percussion and striking platform.  
From layer no.1 (Reg. no. 139).
11. Parallel-sided flake with broken ends shows trapezoid transverse section and retouched margins. It has retained bulb of percussion at the proximal end.  
From layer no.2 (Reg. no. 109).
12. Parallel-sided blade with a trapezoidal section shows one edge chipped. Both the ends are broken.  
From layer no.1 (Reg. no. 62).
13. Parallel-sided blade broken into two pieces, shows a trapezoid section and one retouched margin. It was used as sickle blade. The other margin has retained primary flake-cut.  
From layer no.1 (Reg. no. 423).
14. Parallel-sided short blade, broken at the ends, shows trapezoid section and a curve at the distal end. It has preserved bulb of percussion and striking platform.  
From layer no.1 (Reg. no. 286).
15. Parallel-sided short blade shows retouching on margin and a trapezoid transverse section.

It is broken at both the ends.

From layer no.1 (Reg. no. 168).

16. Fragment of a blade with chipped margins shows triangular transverse section. It has retained a portion of bulb of percussion.  
From the surface (Reg. no. 58).
17. Fragment of a blade with both margins chipped and irregular triangular section is broken at the ends. It is an asymmetrical flake.  
From layer no.1 (Reg. no. 307).

## **B. STONE OBJECTS**

The stone artifacts comprise touchstone, sling ball, tablet, weight and drill-bits. Each of them is described below:

### **Pl. XXVII**

1. Touchstone- Made of fine grained black chert stone, the ovaloid touchstone has plain truncated ends. The flat surface bears depression owing to use.  
From the surface (Reg. no. 37).
2. Tablet- Roughly disc-shaped thick tablet made in coarse grained sandstone.  
From layer no. 1 (Reg. no. 155).
3. Sling ball- A large spheroid made of coarse sandstone. It is slightly biconical in profile.  
From the surface (Reg. no. 18).
4. Weight- Milky grey coloured fine polished weight made of chert (?). Its one face is slightly convex, while the other planes are plain.  
From layer no. 2 (Reg. no. 274).
5. Drill bits- Fragments of drill-bits made of phtanite (not illustrated).  
From layer no. 1 (Reg. no. 306).



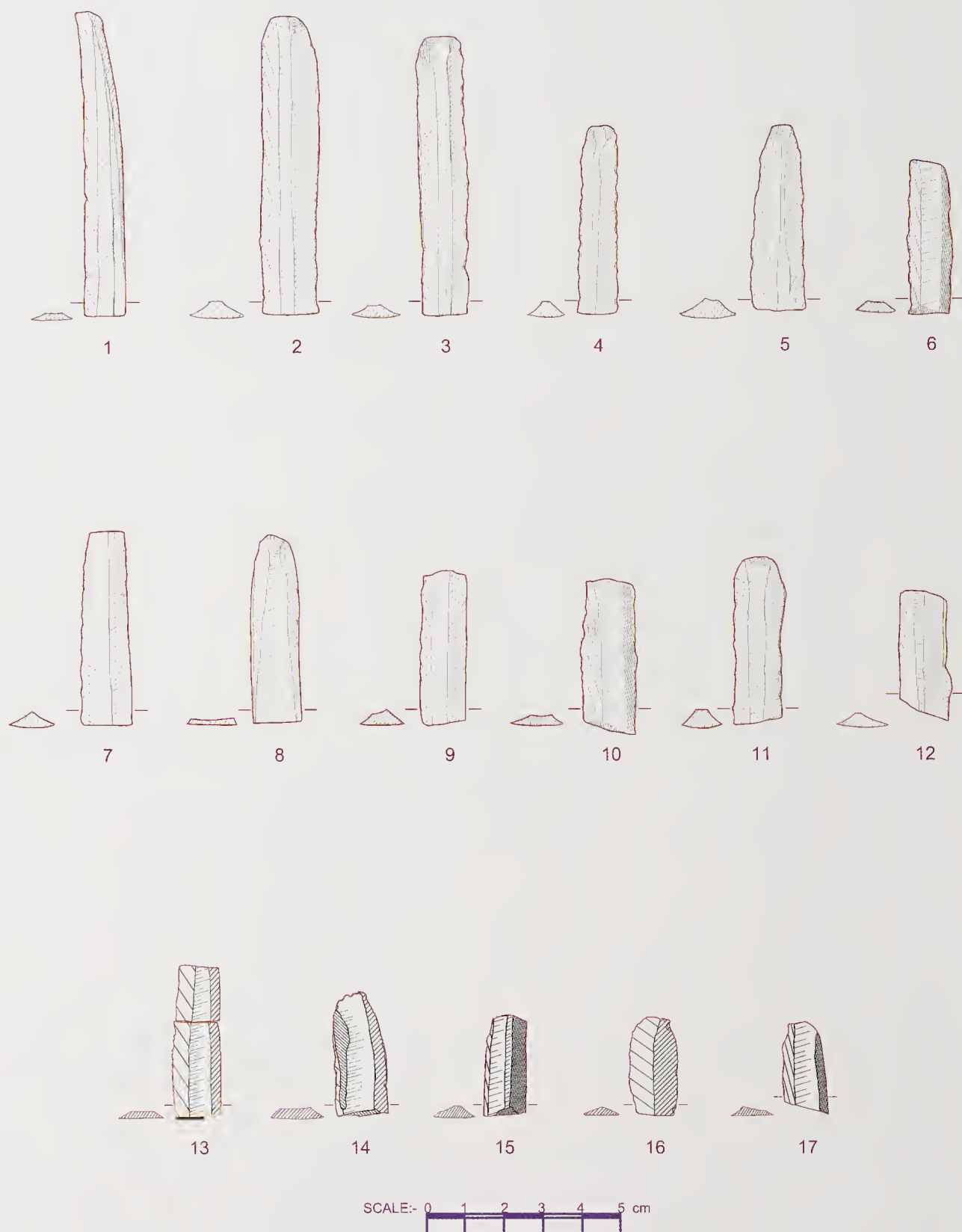
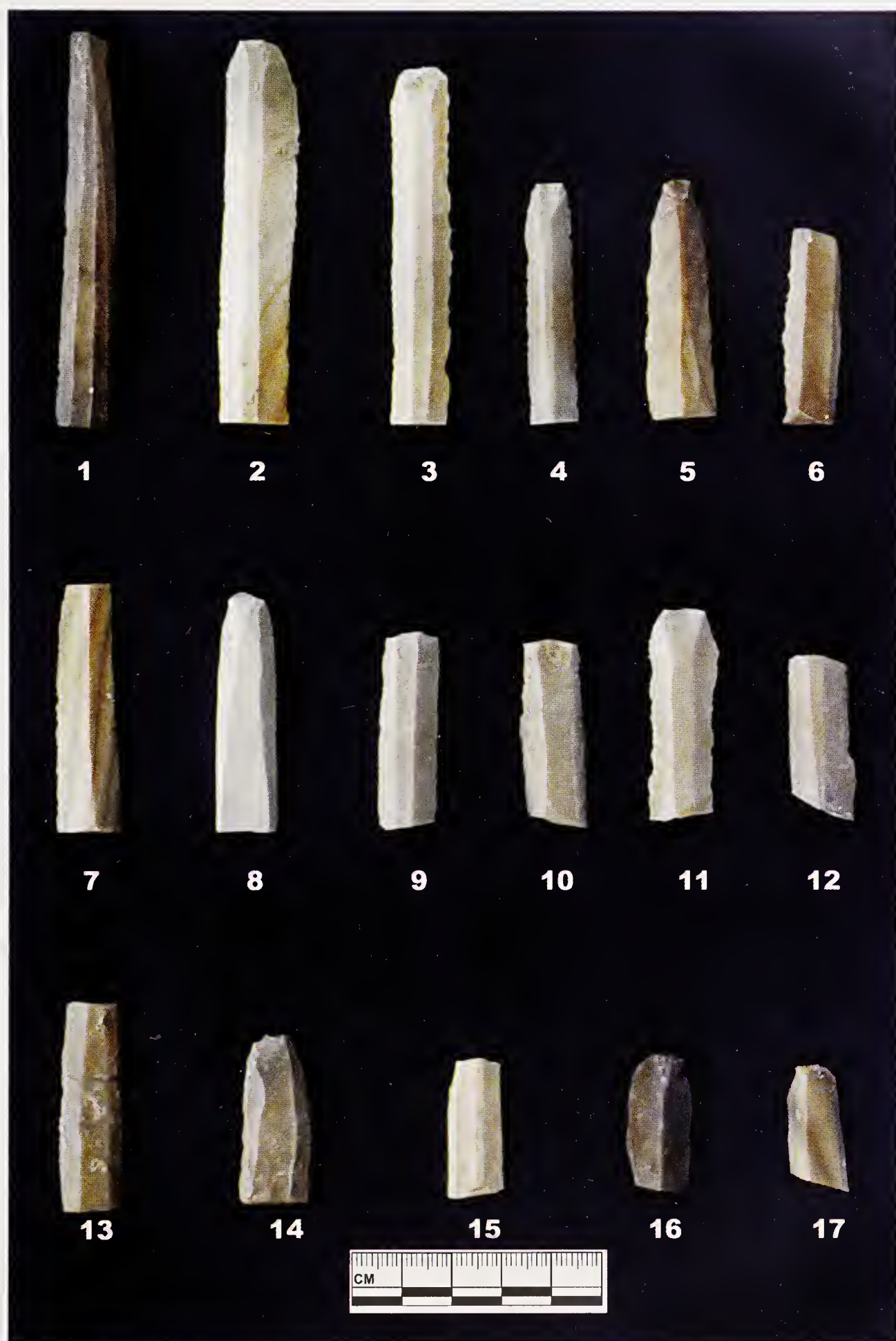


Fig. 16. Chert blades (1-17)



*Pl. XXVI. Tarkhanewala-Dera : Chert blades. See pp. 73,75*





Pl. XXVII. Tarkhanewala-Dera : Stone objects. See p. 75

## C. TERRACOTTA OBJECTS

### i. Figurines

Similar to most of the Harappan clay figurines, the excavated specimen are handmade, solid, coarse, naturalistic and highly stylized. It is not certain if they were modelled for secular, ritualistic or for both the purposes but this art of common people continued subsequently. Save for Harappa, in all the Indus Valley sites the number of male figurines is extremely low. They are generally modelled seated and exhibit pinched nose, rough workmanship, bare body, either clean shaven or bearded. Animal forms occur in abundance in all the Harappan sites. The most commonly represented animal is bull. The stylized bulls are short horned and lack dewlap. The excavated specimen do not represent seriousness of the artist but display conventional treatment meant for amusement and caricature. To this type also belong the crude forms of other animals shaped by pinching clay and applied pellets. They are bereft of pedestalled bases.<sup>1</sup>

#### a. Human

##### Fig. 17; pl. XXVIII

Only one well-fired buff coloured, handmade, solid male figurine wearing a plain lower garment was found. Seated with extended legs presumably intended to be modelled conjoined, its hands are also broken. The head

is tinsured while the eyes and mouth are indicated by blind holes. The ears are conspicuous by their absence. The damaged nose is shaped by clinching the clay up. Akin to Lothal figurines, the nostrils are absent which are commonly met in the Indus Valley, but at the same time like other Harappan male terracotta it is devoid of any slip.<sup>2</sup> The notable feature of this small figurine is the goat like combed beard delineated in relief.<sup>3</sup>

From layer no.1 (Reg. no. 338).

### b. Animal

Of the eight animal figurines recovered here no interesting feature could be noticed and exhibit no trace of any slip. Out of these only seven are described. A majority of them represent bull, lacking elegance and sensuousness, akin to other proto-historic cultures of the subcontinent. The bulls are modelled with humps and short outspreading horns as found in the contemporary levels of Gujarat and Sindh.<sup>4</sup> No animal figurine or horn bear any painting. Seven of them are described here.

##### Fig. 18; pl. XXIX

1. A bull with a pronounced hump, sturdy built, short thick neck and raised head. It is overfired and drab in colour. The eyes are indicated by blind holes; while the ears, horns and tail have been obliterated, the mouth is badly damaged. The separately

<sup>1</sup> Arundhati Banerji, *Early Indian Terracotta Art* (New Delhi, 1994), pp. 25-31.

<sup>2</sup> Dilip K. Chakraborty, 'Terracotta of the Harappan Civilization with Special Reference to Indian Sites,' *Marg*, Vol. 54, Number 1, September, 2002 p.15.

<sup>3</sup> A similar but quite large and beautifully modelled terracotta image, presumably wearing a horned dress from Mohenjodaro (DK 7508) is presently housed in Karachi Museum, Pakistan. For further details see Jonathan Mark Kenoyer, *Ancient Cities of the Indus Valley Civilization* (Delhi, 1998), pp.113 and 224.

<sup>4</sup> Kenoyer, *op.cit.*, p.164.





Fig. 17. Human figurine



*Pl. XXVIII. Tarkhanewala-Dera : Terracotta human figurine. See p. 79*



shown fore-legs being broken, its back is obliquely halved.

From layer no.2 (Reg. no. 88).

2. Fragment of a bull showing a short thick neck, drooping head, hump and muzzle made pointed by pinching. Dull red and moderately baked, the eyes are indicated by large oval see-through holes. The side stretching horns are damaged at the ends. Sturdy built animal appears to be in attacking mood. The rear portion is mutilated.

From layer no. 2 ( Reg. no. 96).

3. Humped bull, dull red and moderately baked sturdy figurine, modelled with thick raised neck. The ears, horns and mouth are defaced. The lost tail is indicated by a ridge. The legs and rear portion have been obliterated.

From layer no.1 ( Reg. no. 113).

4. Fragment of a bull with pointed hump and muzzle. Dull red and moderately baked, it is shown with thick neck and drooping head, side stretched horns and see-through pierced eyes. The hind part is mutilated. The figurine appears to be in charging pose.

From layer no.1 (Reg. no. 190).

5. Fragment of the head of a squirrel (?) showing thick neck, pointed mouth, deeply pierced eyes and raised bifurcated ears. It is well-fired and dull red in colour.

From the surface ( Reg. no. 22)

6. Drab moderately baked head of animal showing slightly curved broken horns. The conical muzzle is shaped by pinching.

From layer no.1 (Reg. no. 91).

7. Dull red animal figurine (elephant ?) moderately baked and realistically modelled has large cephalic lobes, the proboscis (?) being mutilated. A ridge on the back denotes the traces of tail.

From layer no.2 (Reg. no. 331).

## ii. Sling balls and Marbles

A dozen terracotta sling balls and marbles were found. Some of them are perfect spheroids, whereas others have been crudely modelled. The four large examples represent sling balls and the remaining eight were probably used as marbles by the children. Some of the marbles have retained the red wash but none bears any painting.

### Sling balls

#### Pl. XXX

1. Well-baked buff coloured spherical ball with a slight biconical profile. It is crudely modelled.

From the surface (Reg. no. 30).

2. Moderately large sized, well-baked buff coloured roughly spheroid.

From the surface (Reg. no. 36).

3. Large sized, well-baked buff coloured crudely modelled spheroid.

From layer no. 1 (Reg. no. 177).

4. Crudely modelled, well-baked buff coloured spheroid.

From layer no. 2 (Reg. no. 209).

### Marbles

#### Pl. XXXI

1. Well-baked, buff coloured perfectly rendered spheroid.

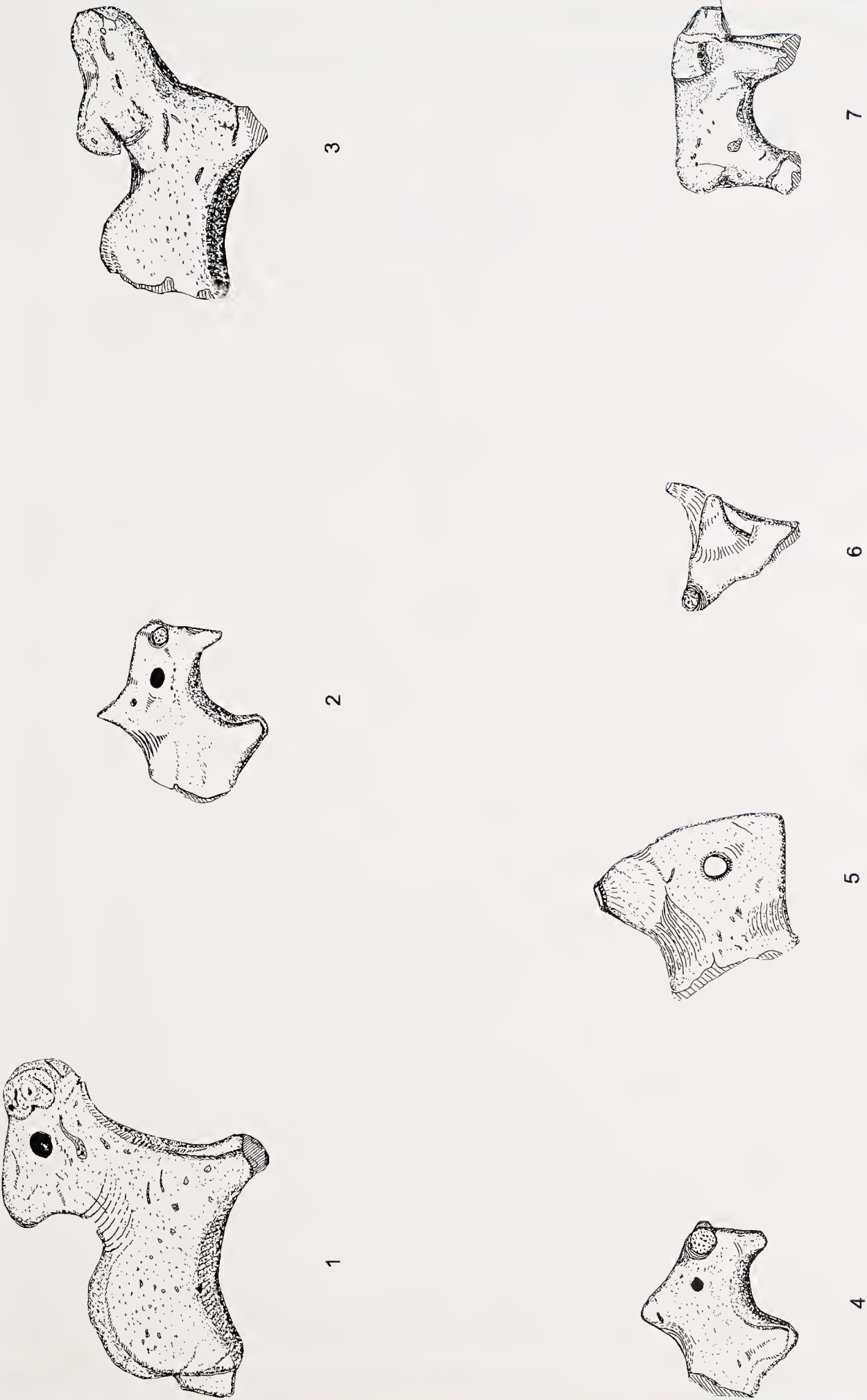
From the surface (Reg. no. 35).

2. Well-baked, spheroid coated with brick-reddish wash.

From layer no. 1 (Reg. no. 72).

3. Well-baked, reddish spheroid. Partly broken.

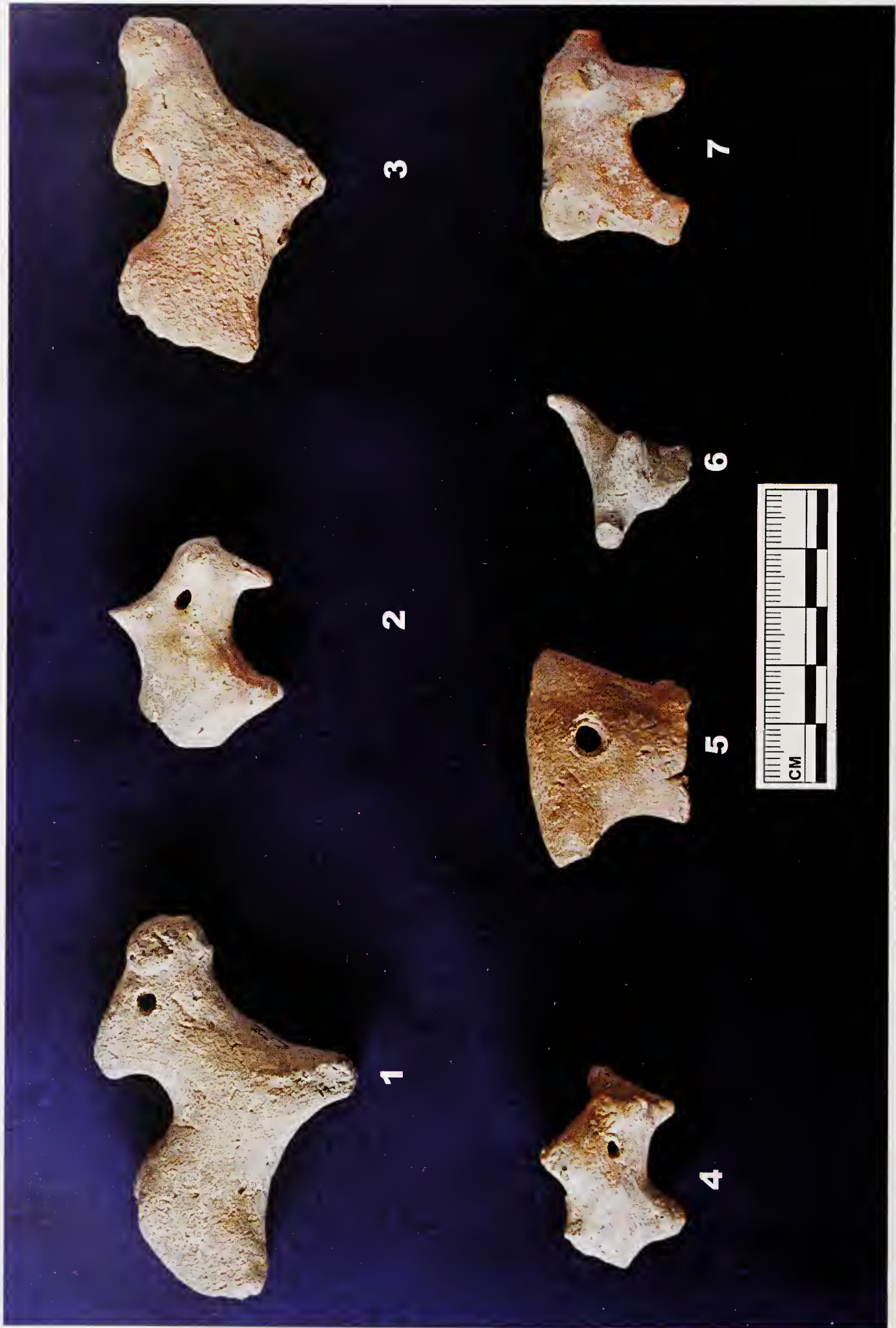
From layer no. 3 (Reg. no. 123).



Scale:-  
0 1 2 3 4 5cm

Fig. 18. Animal figurines (1-7)





Pl. XXIX. Tarkhanewala-Dera : Terracotta animal figurines. See pp. 79,82



Pl. XXX. Tarkhanewala-Dera : Terracotta sling balls. See p. 82



4. Well-fired, red coloured perfect spheroid.  
From layer no. 1 (Reg. no. 208).
5. Well-baked red spheroid, slightly damaged.  
From layer no. 1 (Reg. no. 234).
6. Well-baked, reddish spheroid, slightly chipped off.  
From layer no. 1 (Reg. no. 276).
7. Well-baked, reddish, perfect spheroid.  
From layer no. 2 (Reg. no. 317).
8. Well-baked, red coloured perfect spheroid.  
From layer no. 2 (Reg. no. 415).

### iii. Earrings

Seven circular earrings with a large hole for suspension were obtained. They are described below.

### Pl. XXXII

1. Well-fired buff coloured plano-biconical ring.  
From the surface (Reg. no. 71).
2. Well-fired, brick red thick ring with plano-convex section.  
From layer no. 2 (Reg. no. 334).
3. Well-fired reddish ring with plano-convex profile.  
From layer no. 1 (Reg. no. 211).
4. Reddish, plano-biconical ring. It is slightly damaged.  
From layer no. 1 (Reg. no. 146).
5. Fragment of a well-baked reddish thick ring.  
The external surface tapers so as to form a ridge, the inner surface being plain.  
From the surface (Reg. no. 26).

6. Fragment of a ill-fired, dull red coloured thick ring with plano-convex section. Found in two pieces, it has been mended.  
From layer no.2 (Reg. no. 294).
7. Well-fired, red coloured thick ring with plano-convex section. A major portion of the exterior has been chipped off.  
From layer no. 1 (Reg. no. 233).

### iv. Crucibles and Baby feeder cup

Crucibles were used by smiths for melting and casting metals. Two examples were recorded.

### Pl. XXXIII

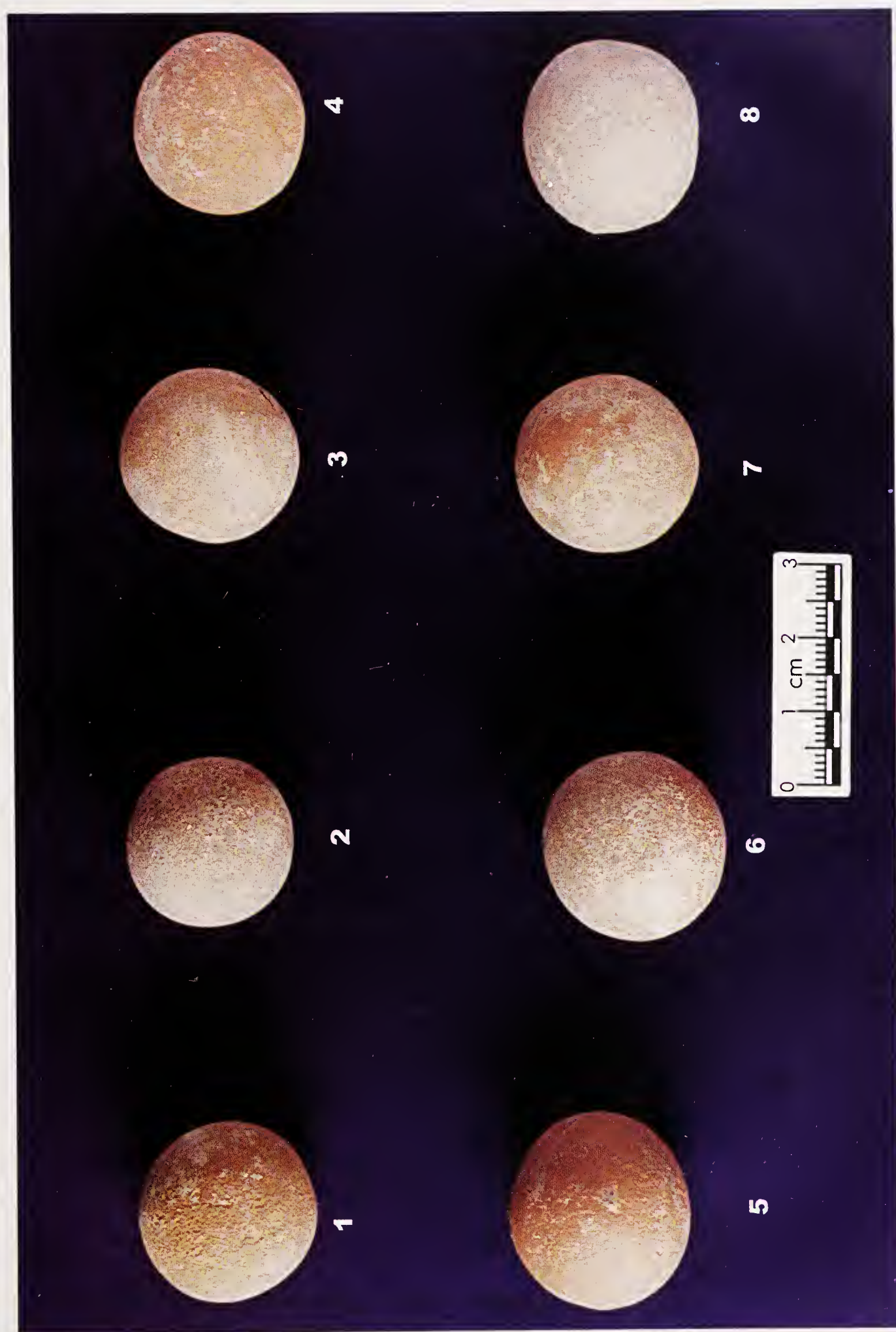
1. Well-baked, dull red wheel thrown and large, footed crucible has a wide mouth; it also bears a wash.  
From layer no.1 (Reg. no. 366).
2. Well-baked handmade cup shaped crucible has flaring rim; it bears red wash.  
From layer no. 1 (Reg. no.133).
3. Baby feeder cup has been reported from the Harappan levels at Harappa,<sup>1</sup> Mohenjo-daro,<sup>2</sup> Kalibangan,<sup>3</sup> Dholavira and Juni Kuran<sup>4</sup> etc. One specimen of handmade baby feeder cup was found. The well-fired, dull red and flat based cup is provided with a large opening on the top for pouring milk or water while the jet with a narrow opening on the other end for suckling purpose of the baby has been broken. It is of medium fabric and treated with wash.  
From layer no.1 (Reg. no. 54).

<sup>1</sup> Madho Sarup Vats, *Excavations at Harappa*, 2 Vols. (New Delhi, reprinted 1999), pp.283 and 375, pl. LXXI. 67, 89.

<sup>2</sup> E.J.H. Mackay, *Further Excavations at Mohenjo-daro*, 2 Vols., p.210, pl. LXVI.1-2.

<sup>3</sup> B.B.Lal, *The Earliest Civilization of South Asia* (New Delhi, 1997), p.172, pl. XIIB.

<sup>4</sup> Subhra Pramanik 'Excavation at Juni Kuran 2003-04: A Preliminary Report' *Puratattva*, 34 (New Delhi, 2004), p.55, fig.9.



Pl. XXXI. Tarkhanewala-Dera : Terracotta marbles. See pp. 82, 86





Pl. XXXII. Tarkhanewala-Dera : Terracotta earrings. See p. 86



Pl. XXXIII. Tarkhanewala-Dera : Terracotta crucibles and baby feeder cup. See p. 86



**v. Pyramidal objects**

Pyramid shaped tetrahedrons (with four plane faces) might represent foot-men in a game of chess. Made of fine levigated clay they are imparted with red wash.

**Pl. XXXIV**

1. Well-baked tetrahedron having symmetrical planes. It bears red wash.  
From layer no. 2 (Reg. no. 92).
2. Dull red coloured tetrahedron.  
From layer no. 2 (Reg. no. 97).
3. A smaller example. Other particulars are similar to the above.  
From layer no. 2 (Reg. no. 224).

**vi. Discoid tablets and Hopscotch**

The handmade disc shaped tablets are known from other Harappan sites. Either convex or concave in profile, they were used as game objects. Five discoid tablets and one hopscotch were found. They are described below:

**Pl. XXXV**

1. Small greyish thick discoid tablet with slightly raised edge. Both the surfaces are concave.  
From layer no. 1 (Reg. no. 87).
2. Red discoid tablet with flat base, the concave surface has been slightly damaged.  
From layer no. 1 (Reg. no. 193).
3. Small, dull red discoid tablet bears depression on either side.  
From layer no. 1 (Reg. no. 158).
4. Dull red discoid tablet with one surface slightly convex, it has slightly been chipped off.  
From layer no. 1 (Reg. no. 202).

5. Red coloured, well-fired circular hopscotch bears three parallel incised lines.  
From layer no.1 (Reg. no. 81).
6. Ill-fired drab discoid tablet having one convex plane decorated with flower petals on both the sides. Its one surface is slightly damaged.  
From layer no.1 (Reg no. 347).

**vii. Toycart frames**

The toycarts are typified by solid or hollow chassis provided with holes for axle and perforations for setting removable sidings. They indicate that people used two-wheeled ox-cart for transportation as attested to by folks living in other Harappan sites.

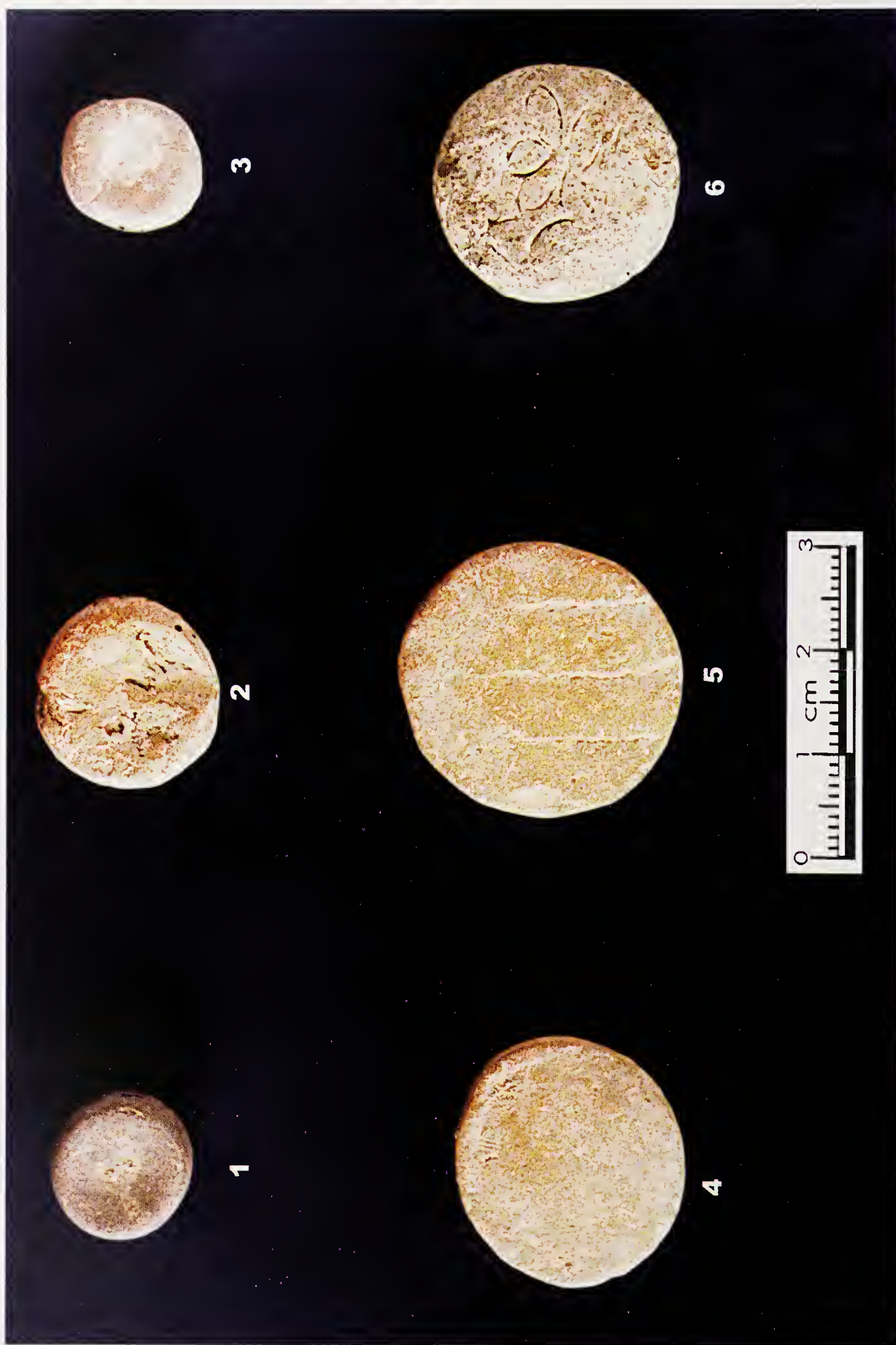
**Fig. 19; pl. XXXVI**

1. Brick-red 'L' shaped fragment of a hollow chassis . It has retained a hole on the corner of the sidebar for fixing the axle.  
From layer no.2 (Reg. no. 400).
2. Fragment of a dull red, rectangular chassis bearing two vertical holes on the corners and retaining one crossbar hole on the side. It has been obliquely mutilated.  
From layer no. 2 (Reg. no. 223).
3. Dull red, small solid chassis, constricted in the middle is moderately baked. Roughly rectangular in shape, it is provided with two pairs of lateral holes for fixing axle with lashings. The central portion bears a see-through hole.  
From layer no.2 (Reg. no. 281).
4. Dull red, small moderately baked hand made cylindrical cart-frame with a pair of lateral holes for providing wheels.  
From layer no.2 (Reg. no. 301).



Pl. XXXIV. Tarkhanewala-Dera : Terracotta pyramidal objects. See p. 90





Pl. XXXV. Tarkhanewala-Dera : Terracotta discoid tablets and hopscotch. See p. 90

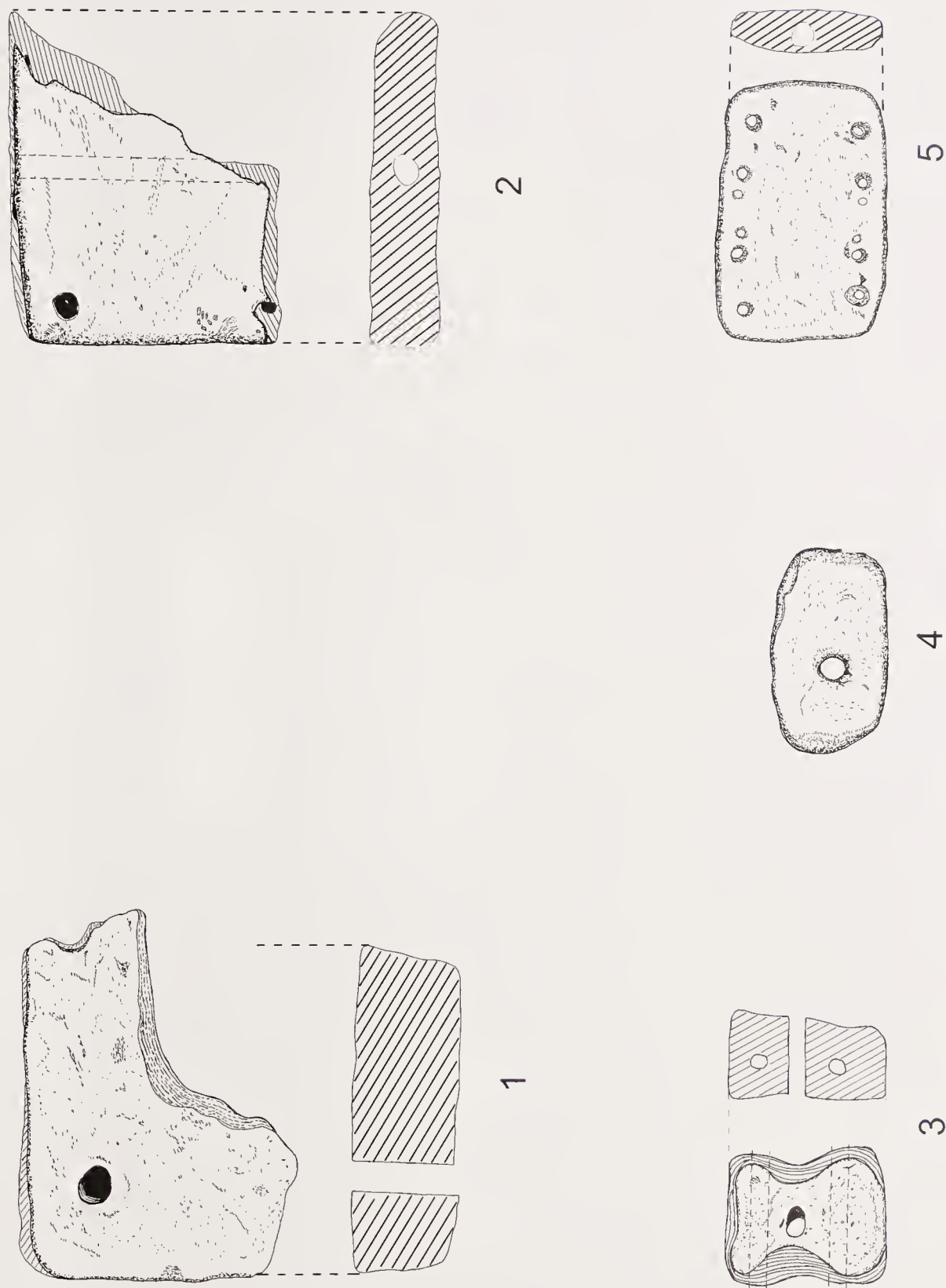


Fig. 19. Toy cart frames (1-5)





Pl. XXXVI. Tarkhanewala-Dera : Terracotta toy cart frames. See pp. 90, 95



5. Dull red, moderately baked rectangular handmade solid chassis is provided with six vertical see-through perforations on two sides and one blind hole on one of the narrower edges. The profile of chassis is slightly concave.

From layer no.1 (Reg. no. 255).

#### **viii. Spinning tops**

Terracotta cones with sharp point on the top and flat circular base were found. They differ from flanged, biconical counterparts of Lothal but are similar to Kalibangan and Baror. Probably they were used by the children to spin with the help of fingers. Six fragmentary specimens obtained from excavation are described below:

##### **Pl. XXXVII**

1. Small dull red conical spinning top with flat circular base and tapering to a point (broken).  
From the surface ( Reg. no. 03).
2. Fragment of a drab spinning top, the circular base and tapering point have been broken.  
From layer no. 3 (Reg. no. 398).
3. Fragment of a drab spinning top with truncated tapering cone resting on a flat but irregular circular base.  
From layer no. 2 (Reg. no. 205).
4. Buff coloured spinning top with broken tapering cone. The wide circular base is slightly concave in the middle.  
From layer no. 3 ( Reg. no. 378).
5. Buff coloured pointed cone of a spinning top; it is damaged at the base.  
From the layer no.1 (Reg. no. 126).
6. Drab spinning top with a tapering top; the wide circular base is broken.  
From the surface (Reg. no. 51).

#### **ix. Spindle whorls**

The spindle whorls were used for spinning and weaving. They are circular and plano-convex in profile with a hole for spindle in the centre. Seven examples were found. They are described hereunder:

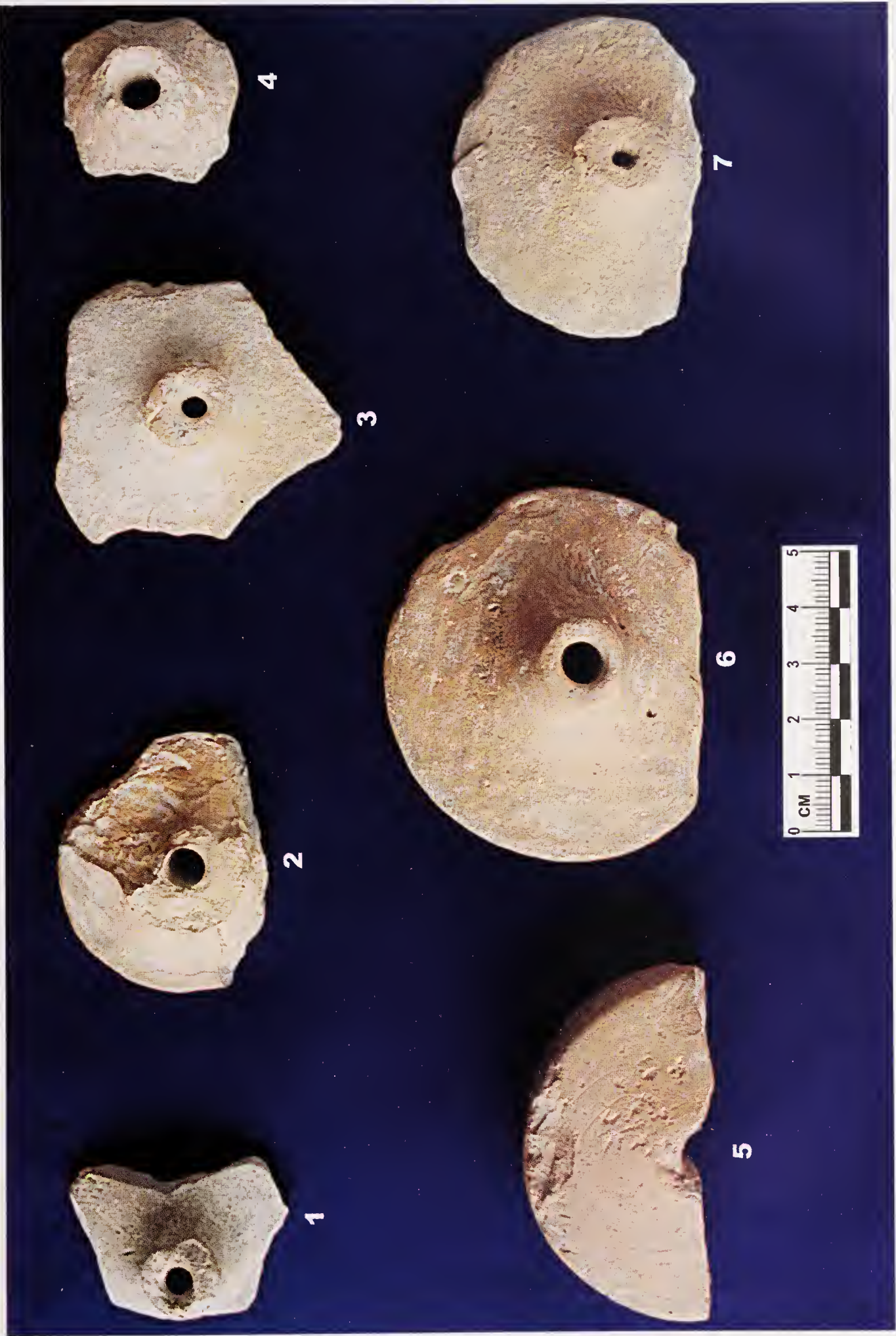
##### **Pl. XXXVIII**

1. Fragment of a dull red coloured spindle whorl. It has only retained the projected hub meant for spindle.  
From layer no. 1 (Reg. no. 183).
2. Fragment of a red-slipped spindle whorl. Its bottom is flat and circular whereas the section is plano-convex. The projected hub bearing a hole for fixing the spindle as well as the slightly raised circular margins are in badly damaged state.  
From layer no. 2 (Reg. no. 258).
3. Fragment of a well-fired, dull red coloured plano-convex spindle whorl bearing a projected hole for fixing the spindle. Its circular flat portion is broken all around.  
From layer no. 1 (Reg. no. 122).
4. Fragment of a well-fired red coloured spindle whorl. It has retained the hub portion, the circular flat part being completely broken. The projected hub bearing a hole for fixing the spindle is also damaged.  
From layer no. 1 (Reg. no. 203).
5. Broken part of a red slipped, well-baked spindle whorl, it is rectangular in section and circular on plan. It bears a central perforation accommodating the spindle.  
From layer no. 1 ( Reg. no. 219).
6. Well-fired, disc-shaped, plano-convex spindle whorl provided with a flat circular bottom bears a prominent hub bearing a hole for fixing the spindle. The red-slipped whorl





Pl. XXXVII. Tarkhanewala-Dera : Terracotta spinning tops. See p. 95



Pl. XXXVIII. Tarkhanewala-Dera : Terracotta spindle whorls. See pp. 95,98



is painted with black parallel oblique lines intersecting so as to form triangles. Its circular portion is broken.

From layer no. 1 (Reg. no. 73).

7. Well-fired, dull red coloured plano-convex spindle whorl provided with a flat, circular bottom and a projected hole for putting the spindle. It is in partly broken state.  
From layer no. 1 (Reg. no. 128).

#### x. Spools

Spools are reported from various Harappan sites *viz.*, Lothal, Dholavira, Kalibangan, Baror etc. They were used for the purpose of rolling the cotton/silk threads. The excavation yielded eighteen handmade spools as described below:

#### Pl. XXXIX

1. Grey, cylindrical spool with slightly bulging hubs at both ends.  
From the surface (Reg. no. 43).
2. Drab unfinished irregular cylindrical spool having slightly bulging hub at one end, the other end being broken.  
From layer no.1 (Reg. no. 250).
3. Greyish, thin cylindrical spool with bulging hubs at both ends.  
From layer no.1 (Reg. no. 364).
4. Buff coloured, well-baked elongated cylindrical spool having bulging hubs at both ends, partly damaged.  
From layer no. 1 (Reg. no. 171).
5. Drab elongated cylindrical spool with prominent bulging hub at either end, one end is slightly damaged.  
From the surface (Reg. no. 48).
6. Drab spool with large bulging hubs and constricted body.  
From layer no. 2 (Reg. no. 225).
7. Red coloured, well-fired cylindrical spool with inconspicuous hub at either end.  
From layer no.1 (Reg. no. 125).
8. Greyish, ill-fired cylindrical spool with usual hubs at both the ends.  
From layer no.1 (Reg. no. 269).
9. Black-and-red coloured, thick cylindrical spool with hubs.  
From layer no. 2 (Reg. no. 199).
10. Dull red, ill-fired thick cylindrical spool with hubs.  
From layer no.1 (Reg. no. 341).
11. Red, well-fired cylindrical spool with two bulging hubs.  
From layer no. 2 (Reg. no. 371).
12. Grey, ill-fired cylindrical spool with slightly bulging hubs at both the ends.  
From layer no. 2 (Reg. no. 213).
13. Drab spool with prominent bulbous bulging hubs at both the ends.  
From the surface (Reg. no. 27).
14. Buff coloured, well-fired elongated cylindrical spool with hubs at either end.  
From layer no.1 (Reg. no. 166).
15. Greyish cylindrical spool with two unequal bulging hubs. Smaller hub is partly damaged.  
From the surface (Reg. no. 16).
16. Dull red, well-fired comparatively larger cylindrical spool with prominent hubs at both the ends. In profile it is similar to a kettledrum.  
From layer no.1 (Reg. no. 425).
17. Greyish ill-fired thick and large spool broken from the half. It retains a prominent bulging hub at one end.  
From layer no.1 (Reg. no. 251).
18. Red, well-fired thick cylindrical spool with hubs at both the ends.  
From layer no.1 (Reg. no. 355).



Pl. XXXIX. Tarkhanewala-Dera : Terracotta spools. See p. 98



## D. BONE OBJECTS

Four bone objects recovered from the excavation are made out of ribs of mammals viz., ox, buffalo etc. Their paucity may be due to their friable nature. The implements include sharp-edged or pointed arrowheads, awl, needle and stylus or engraver.

### Fig. 20; pl. XL

1. Buff coloured awl with a fine working point and polished surface is circular in section. Broken into two pieces, its other end was presumably also pointed.  
From layer no. 2 (Reg. no. 397).
2. Fragment of a white coloured engraver with blunt point is circular in section. A knife mark for chiselling near the end is visible.  
From the surface (Reg. no. 34).
3. Fragment of a short polished engraver with broken point, it is circular in section.  
From layer no. 2 (Reg. no. 200).
4. Fragment of an awl/ stylus is circular in section. The tip of the polished tapering implement retaining the knife mark is broken.  
From the surface (Reg. no. 45).

## E. COPPER OBJECTS

Twenty-two copper objects were recorded. Presumably copper was obtained from the ancient mines of Khetri-Ganeshwar area and its neighbourhood. Distribution of these objects is as below:

### i. Spearhead

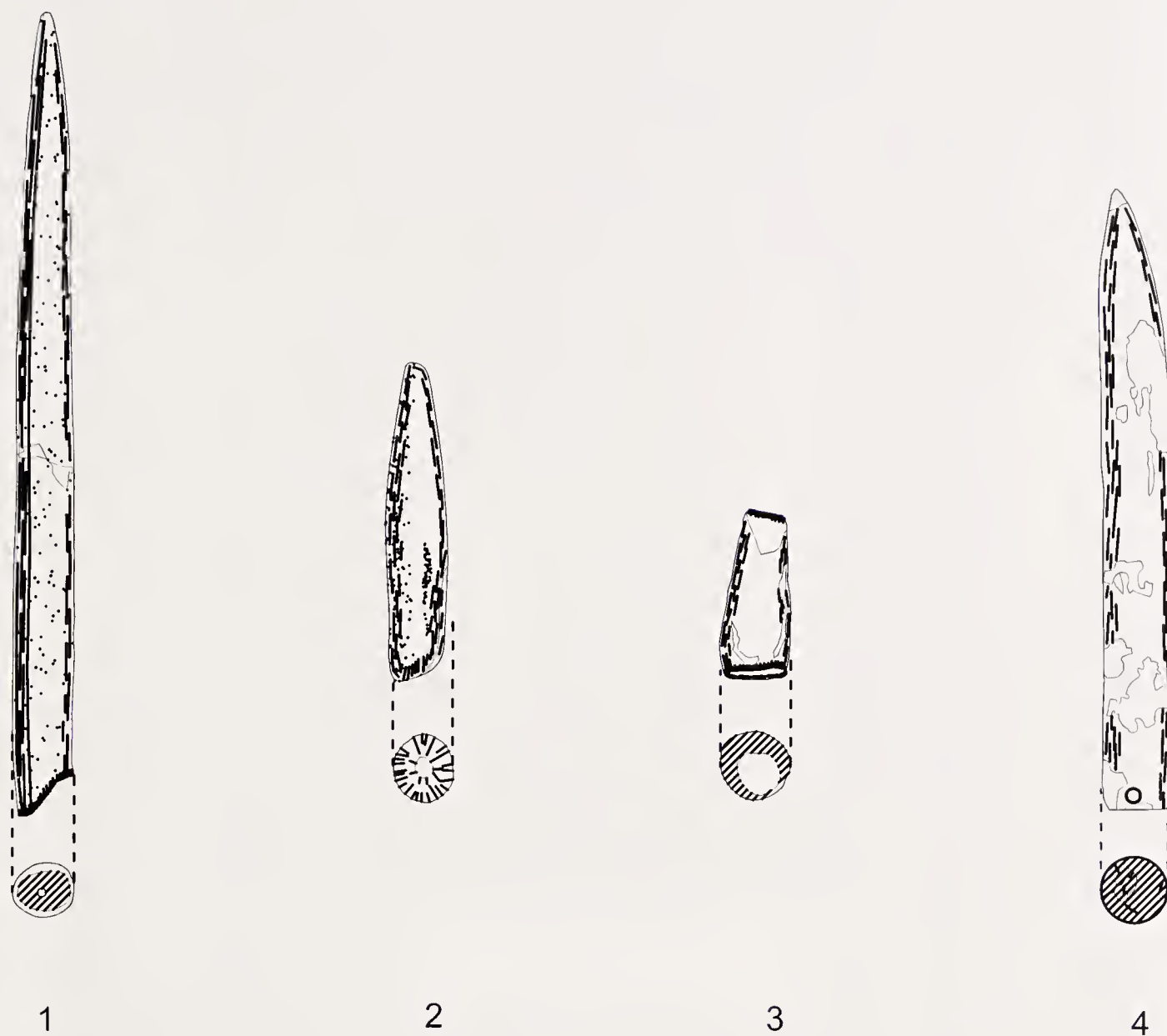
An elongated symmetrical leaf shaped spearhead with a tang, sharpened at both the ends and terminating into a point is roughly rectangular in transverse section made of sheet metal, it is 29 cm long 7.5 cm wide and 2 mm in thickness. It resembles with dagger/knife having an equally long blade bereft of a mid rib. This type was hafted into a longitudinally cut wooden frame that acted as a mid rib averting the side play (Fig.21.2; pl. XLI). This variety is confined to the Harappan levels and has not been reported from the Gangetic valley. Previously also this site has yielded two copper spearheads.<sup>1</sup> Similar bronze objects are reported from Ropar and Mohenjodaro.<sup>2</sup>

From layer no. 2 (Reg. no. 428).

Spearhead	Chisel	Rods	Antimony rod	Bangle	Earring	Fish hooks	Needles	Rings
01	01	04	01	01	01	04	02	07

<sup>1</sup> R.C.Agrawala, 'Aravalli, the Major Source of Copper for the Indus and Indus-related Cultures,' *Frontiers of the Indus Civilization*, (ed.) B.B.Lal and S.P.Gupta (Delhi, 1984), p.160. R.C. Agrawala has informed that during exploration of Bikaner (1952-53), A. Ghosh had found copper objects here. See, photo-album of D.G.A., Neg. nos. 83-84.

<sup>2</sup> Y.D. Sharma, 'Harappan Complex on the Sutlej (India),' *Harappan Civilization*, (ed.) Gregory L. Possehl (Delhi, 1928), p.154, pl. 13.3, no.4; E.J. H.Mackay, *Further Excavations at Mohenjodaro*, 2 Vols (Delhi, 1938) p.460, pl.CXVII, no.8.




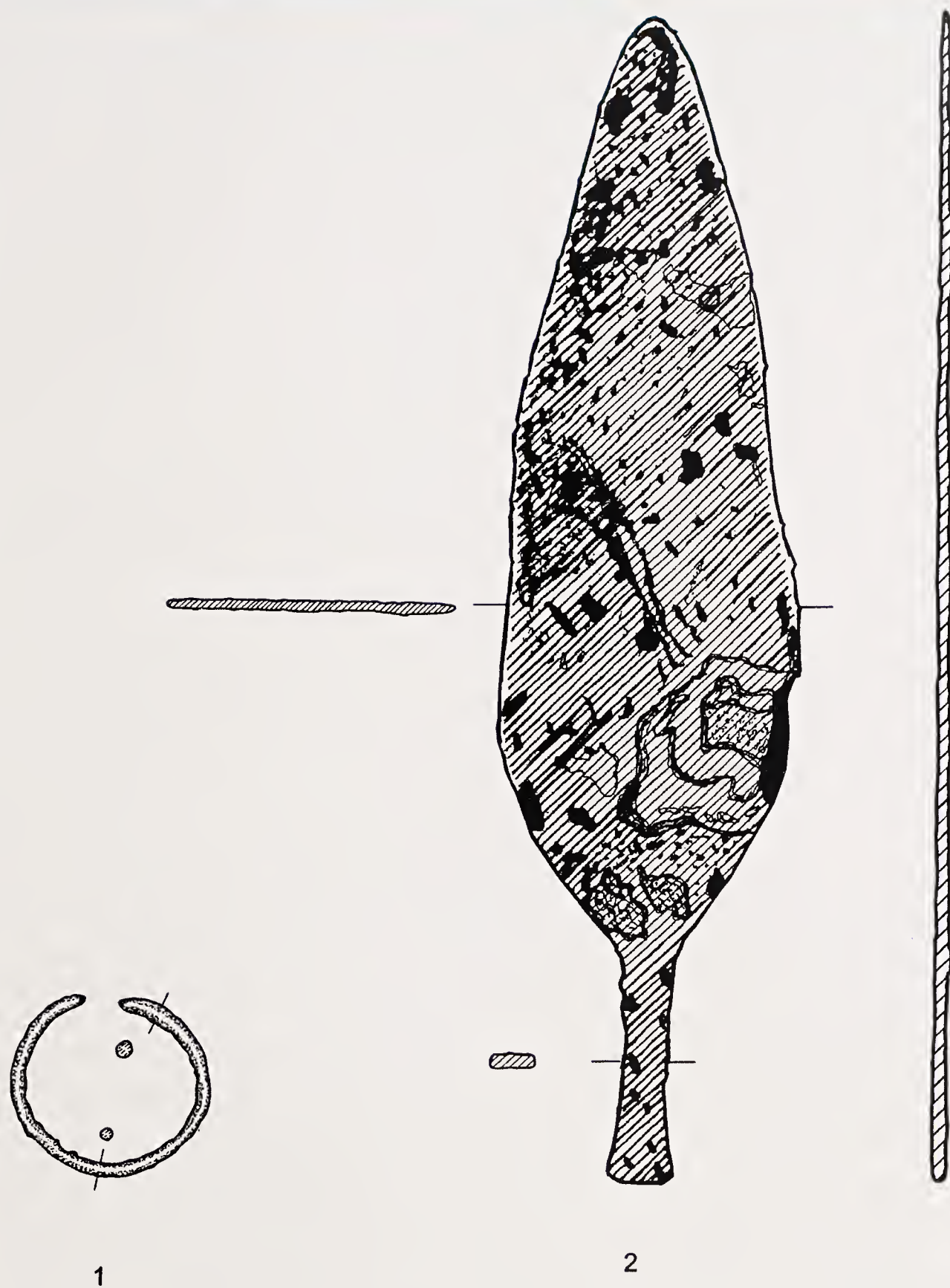
Scale   
0 1 2 3 4 cm

Fig. 20. Bone objects (1-4)





Pl. XL. Tarkhanewala-Dera : Bone objects. See p. 100



Scale 0 1 2 3 4 5cm  
Fig. 21. Copper spearhead and bangle





*Pl. XLI. Tarkhanewala-Dera : Copper spearhead. See p. 100*

## ii. Bangle

Bangle made from a round hammered rod bent in a full circle (dia 5 cm). It is 0.5 cm thick, circular in section and corroded (Fig. 21.1; pl.XLII). The shape between its ends could be pried apart to slip it over the wrist.<sup>1</sup>  
From layer no.1 (Reg. no. 167).

## iii. Chisel, Rods and Antimony rod

### Fig. 22; pl. XLIII

1. Chisel.- The tapering implement worked in a metal rod (15 cm x 01 cm) is rectangular in section while the narrower bevelled end to be stuck with hammer is ovaloid in section. Both the splayed margins are parallel. It was used for carpentry and engraving.<sup>2</sup>  
From layer no.1 (Reg. no. 257).
2. Rod.- The tapering rod broken at pointed end measures 9.5 cm in length. It is circular (dia. 0.3 cm) in section. Similar objects have been found at Mohenjo-daro and Harappa.<sup>3</sup>  
From layer no.1 (Reg. no. 393).
- 3 and 4. Two similar fragments measuring 3.2 cm (Reg. no.318) and 3.3 cm long (Reg. no. 382) respectively rectangular and circular in section were also found.  
From layer no.3.

5. Fragment of rod.- Fragment of 4.3 cm long rod, flattened at both the ends by hammering, is roughly rectangular in section.  
From surface (Reg. no. 1).
6. Antimony rod- A 14.5 cm long rod with a circular section (dia 0.7 cm) was possibly used as a large nail for boring or pegging. The middle portion is thicker than either end.<sup>4</sup>  
From layer no.1 (Reg. no. 368).

## iv. Earring and Fish-hooks

### Fig. 23; pl. XLIV

1. The earring is made from a flat strip with ends joined by touching. The section is rectangular.  
From layer no.1 (Reg. no. 172).  
Four broken specimens of fish-hooks were found of which three are of barbed variety:
2. Fragment of a fish-hook with circular section, barb, loop and shank are damaged.  
From layer no.1 (Reg. no. 351).
3. Crescent shaped fragment of a fish-hook retaining barb.  
From layer no.1 (Reg. no. 83).
4. Small fragment of a fish-hook is rectangular in section.  
From the surface (Reg. no. 38).
5. Small 'U' shaped fragment of a fish-hook made of thick wire.  
From layer no. 1 (Reg. no. 67).

<sup>1</sup> Similar bangles have been found from Lothal and Early Harappan levels of Kalibangan. S.R.Rao, *op.cit.*, p.546, fig.115, pl.CCXLII; B.B.Lal and S.P.Gupta *op.cit.*, p. 229, pl. XXXVIII, no.9.

<sup>2</sup> This variety is also known from Mohenjo-daro, Mackay, *op.cit.*, pp. 473-75 (pls.CXIV, nos. 2,3,5, CXV, no.12).

<sup>3</sup> Mackay, *op.cit.*, pp. 475-76, pl. CXXXI, no.10; Madho Sarup Vats, *Excavations at Harappa*, 2 Vols. (Delhi, 1940) p.390, pl. CXXV, no.33.

<sup>4</sup> It is comparable with Mohenjo-daro, Mackay, *op.cit.*, pp. 473-75 (pls.CXXI, nos.8,9,17, CXXIV, nos 3-5, 11-12), where it has been identified as chisel, S.R.Rao has identified this to be rod in his 'Lothal-A Harappan Port Town, Vol.II (New Delhi, 1985), p.533.





*Pl. XLII. Tarkhanewala-Dera : Copper bangle. See p. 105*

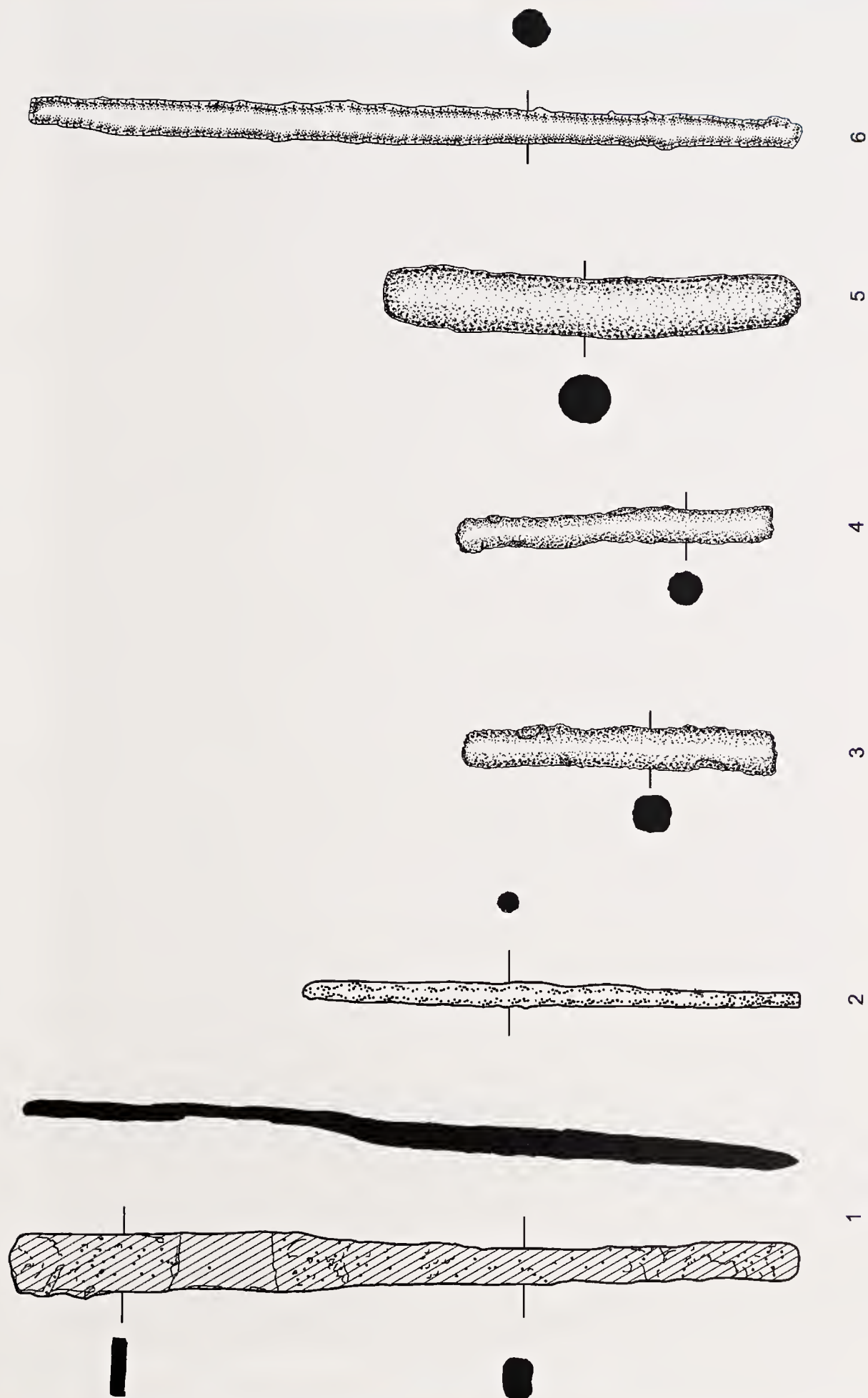


Fig. 22. Copper chisel, rods and antimony rod





*Pl. XLIII. Tarkhanewala-Dera : Copper chisel, rods and antimony rod. See p. 105*

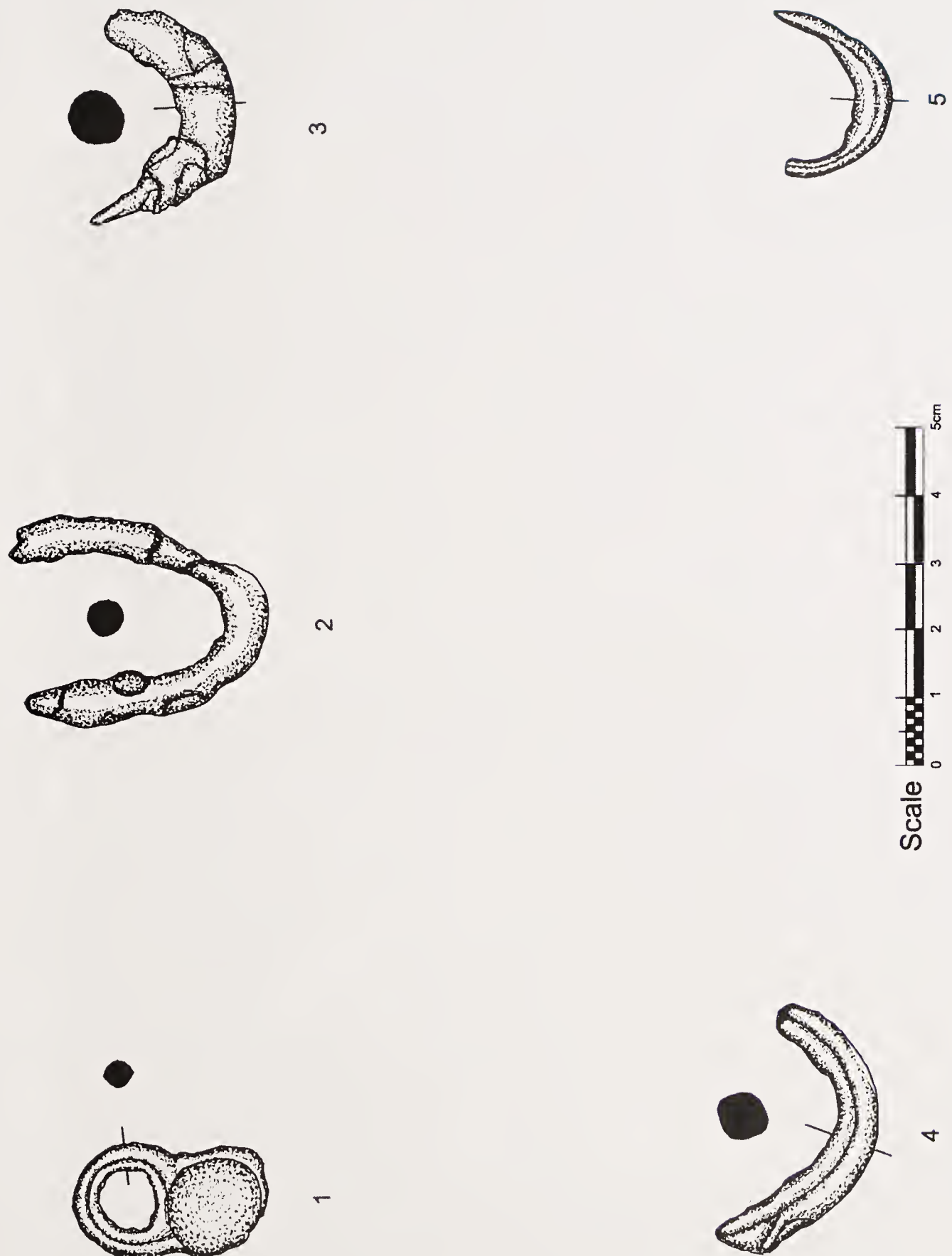


Fig. 23. Copper earring and fish-hooks





Pl. XLIV. Tarkhanewala-Dera : Copper earring and fish-hooks. See p. 105

## v. Needles and Rings

Two needles and seven rings were recorded.

### Fig. 24; pl. XLV

1. A small needle (2.5 cm long) made from a wire with round section, eyelet is indistinct due to incrustation.  
From layer no.1 (Reg. no. 206).
2. A needle (5.5 cm long), made from a wire with broken eyelet, is round in section.  
From layer no. 1 (Reg. no. 207).
3. Ring formed from a flat strip, overlapping ends.  
From layer no. 1 (Reg. no. 79).
4. Ring made from thick wire is roughly circular in section, presently assuming an ovaloid shape, it possesses a joint opening.  
From surface (Reg. no. 49).
5. A small ring made from a circular wire.  
From layer no.1 (Reg. no. 279).
6. A small ring with joint opening.  
From layer no.2 (Reg. no. 156).
7. Fragment of a ring made from a flat strip of wire elliptical in section.  
From layer no. 1 (Reg. no. 65).
8. A small ring with wide joint opening. It has a round section.  
From layer no.2 (Reg. no. 293).
9. A small circular ring made of thin wire has a joint opening. Its central part is thick.  
From layer no. 3 (Reg. no. 337).

## F. MISCELLANEOUS OBJECTS

### i. Amulets

These are flat based truncated, cylindrical objects provided with a groove running along the perimeter. In the Harappan context they have

been found in association with adult or married women.<sup>1</sup> Of the fifteen specimen, made of stone or terracotta, only twelve are described here.

### Pl. XLVI

1. Buff coloured cylindrical-cum-conical amulet with flat base and an incised groove below the truncated top for holding cord or wire. Made of terracotta, it is partly damaged.  
From layer no.1 (Reg. no. 80).
2. Flat based slightly squattish conical amulet with an incised groove below the truncated top. Its upper half is dark tan and the lower portion is buff in colour. It is made of agate.  
From layer no. 2 (Reg. no. 377).
3. Grey coloured conical amulet bearing deep incised groove below the truncated top. Made of serpentine, it is damaged on the lateral half and owing to which its flat circular base has turned oval in shape.  
From layer no. 3 (Reg. no. 383).
4. Flat based elongated conical amulet bears a groove near the truncated top. It is made of black serpentine.  
From layer no. 1 (Reg. no. 387).
5. Drab coloured flat based conical-cum-cylindrical amulet bearing an incised groove below the truncated top. The latter is partially damaged. It is made of serpentine.  
From layer no. 1 (Reg. no. 352).
6. Greyish, very small flat based conical amulet bears a groove below the truncated top. It is made of serpentine.  
From layer no. 1 (Reg. no. 391).
7. Grey coloured serpentine made flat based, cylindrical amulet with pronounced incised groove below the button shaped truncated

<sup>1</sup> Kenoyer, *op.cit.*, p.123, fig. 6.23; S.R.Rao had identified them as weights; see S.R.Rao, Lothal — A Harappan Port Town 1955-62, Vol II, *MASI*, No.78 (New Delhi,1985), pp.577, 650-61.



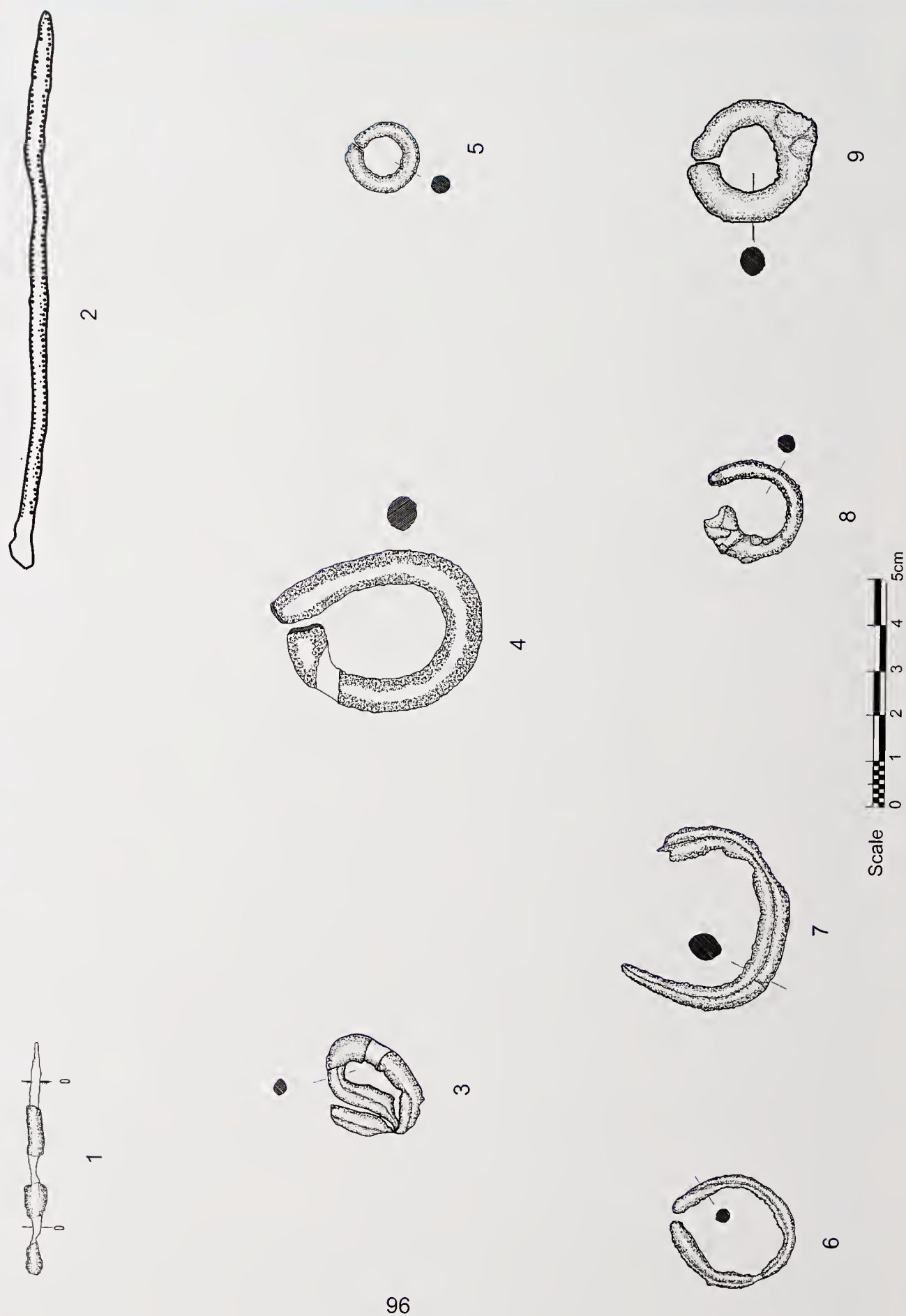


Fig. 24. Copper needles and rings



Pl. XLV. Tarkhanewala-Dera : Copper needles and rings. See p. 111



top is slightly damaged near the base.

From the surface (Reg. no. 05).

8. Drab coloured, flat based cylindrical conical amulet is the tallest among the lot. It bears a deep incised groove below the truncated flat top. It is made of serpentine.  
From layer no. 1 (Reg. no. 164).
9. Buff coloured conical polished amulet bearing an incised groove below the truncated top has been slightly damaged at the base. It is made of serpentine.  
From layer no. 1 (Reg. no. 350).
10. Grey coloured, elongated conical amulet with an incised groove at the truncated top. Its base and vertical profile have been damaged. It is also made of serpentine.  
From layer no.1 (Reg. no. 188).
11. Flat based, elongated conical amulet made of grey serpentine, bears a deep incised groove near the top.  
From layer no. 4 (Reg. no. 117).
12. Dark grey coloured, flat based conical amulet made of serpentine bears a deep incised groove below the truncated top.  
From the surface (Reg. no. 39).

## ii. Terracotta

### Pl. XLVII

1. Gamesman- Grey coloured crudely executed unicone gamesman resting on a concave base.  
From layer no.1 (Reg. no. 112).
2. Castle- Well-baked, greyish circular based cylindrical castle. Its top is broken.  
From layer no. 1 (Reg. no. 191).
3. Pendant- Brick red, arecanut-shaped small pendant, its partly chipped circular base is perforated with a needle.  
From layer no. 2 (Reg. no. 328).

## iii. Bangles and Shell disc

### Pl. XLVIII

1. Fragment of a white coloured plain shell bangle, plano-convex in section.  
From the surface (Reg. no. 42).
2. Fragment of a white coloured plain shell bangle with rectangular transverse section.  
From layer no.1 (Reg. no. 102).
3. Fragment of a creamy white, plain thick shell bangle. It is plano-convex in section.  
From layer no.2 (Reg. no. 312).
4. Fragment of an off white plain and unevenly thick bangle. It is concavo-convex in section.  
From the surface (Reg. no. 52).
5. Fragment of a faience bangle with incised oblique strokes. It is plano-convex in section.  
From the surface (Reg. no. 129).
6. White coloured tiny circular plain shell disc, top is obliquely abraded.  
From the surface (Reg. no. 33).
7. Fragment of a faience bangle with a groove. It is concavo-convex in section. Traces of silver coloured painting are visible.  
From layer no.1 (Reg. no. 362).
8. Fragment of a thick faience bangle incised with hatched design. It is bi-convex in transverse section.  
From the surface (Reg. no. 53).
9. Fragment of a thin faience bangle incised with wavy design. It is triangular in transverse section. It retains traces of silver coloured painting.  
From layer no. 2 (Reg. no. 418).
10. Fragment of a tiny thin faience bangle with grooved upper surface. Lateral sides are incised with vertical strokes. It is plano-concave in section.  
From the surface (Reg. no. 41).
11. Fragment of a thick faience bangle with surface incised with oblique strokes. It is triangular in section.  
From layer no. 1 (Reg. no. 344).



Pl. XLVI. Tarkhanewala-Dera : Amulets. See pp. 111, 114




## 5. SCRIPT

## SEAL, SEALING AND GRAFFITI

One rectangular terracotta seal was found bearing five letters in two rows besides an impression of a seal on terracotta lump exhibiting a figurine of unicorn and four letters. In the latter example three broken letters were also seen on the lower part of the broken portion of the clay lump. A potsherd bearing a letter in Harappan characters was also reported. The first two inscriptions do not tally with the published seals and sealings.<sup>1</sup>

In all thirteen Harappan signs<sup>2</sup> are available which are reproduced below and are well comparable to the Indus signs.

The sign  was also noticed earlier from a potsherd at Tarkhanewala-Dera.<sup>3</sup> From this site an inscribed seal and potsherds bearing graffiti have been reported earlier.<sup>4</sup>

## A. SEAL :

## Pl. XLIX, A-B

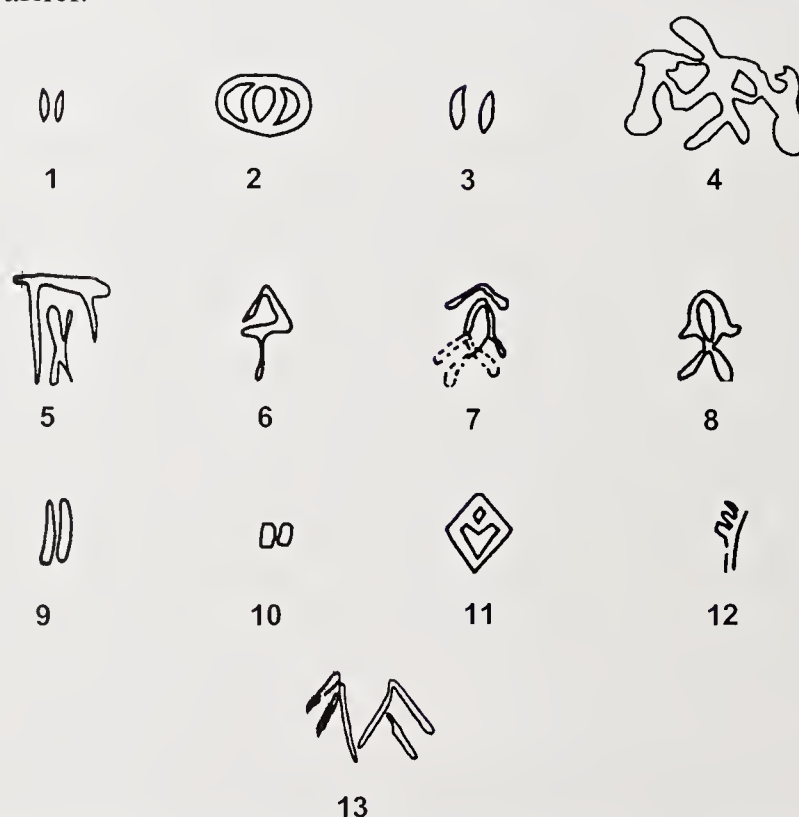
A terracotta square seal with a perforated boss on the reverse and representation of five Harappan characters in two rows on the obverse. From layer no. 4 (Reg. no. 119)

## B. SEALING :

## Pl. L

Impression of a square seal on terracotta lump representing a unicorn standing before a bowl like receptacle on an upright support below four Harappan symbols. Three fragmentary Harappan characters are also seen on the lower part of the broken clay lump.

From layer no. 1 (Reg. no. 247)



<sup>1</sup> Jagat Pati Joshi and Asko Parpola, *Corpus of Indus Seals and Inscriptions*, 1. Collections in India, *MAI*, No. 86, (Helsinki, 1987).

<sup>2</sup> For each sign, see different seals and sealings in *ibid.*

<sup>3</sup> *Op. cit.*, p.363, Fig. Tkwd 3A

<sup>4</sup> *Ibid.*, p.363, Fig. Tkwd-1A, Tkwd-1B, Tkwd-2A and Tkwd 3A



*Pl. XLIX A. Tarkhanewala-Dera : Harappan seal, obverse and reverse. See p. 118*



*Pl. XLIX B. Tarkhanewala-Dera : Harappan seal and its impression. See p. 118*





Pl. L. Tarkhanewala-Dera : Terracotta lump bearing impression of Harappan seal. See p. 118

TABLE-III  
LAYER-WISE DISTRIBUTION OF BEADS CLASSIFIED ACCORDING TO MATERIAL  
(See figs. 25 - 26)

Layer Material	1	2	3	4	Unstratified/ Surface	Total	Percentage
TERRACOTTA	46	42	04	—	08	100	26.73%
FAIENCE	15	09	03	01	02	30	8.02%
AGATE	06	04	02	—	04	16	4.27%
SHELL	04	01	—	—	—	05	1.33%
BLACKSTONE	01	—	—	—	—	01	.26%
AMETHYST	—	—	—	—	01	01	.26%
LAPIS LAZULI	—	01	—	—	—	01	.26%
CARNELIAN	19	14	01	—	05	39	10.42%
STEATITE	16	153	02	01	09	181	48.3%
TOTAL	107	224	12	02	29	374	



## LAYER-WISE DISTRIBUTION OF BEADS TARKHANEWALA-DERA

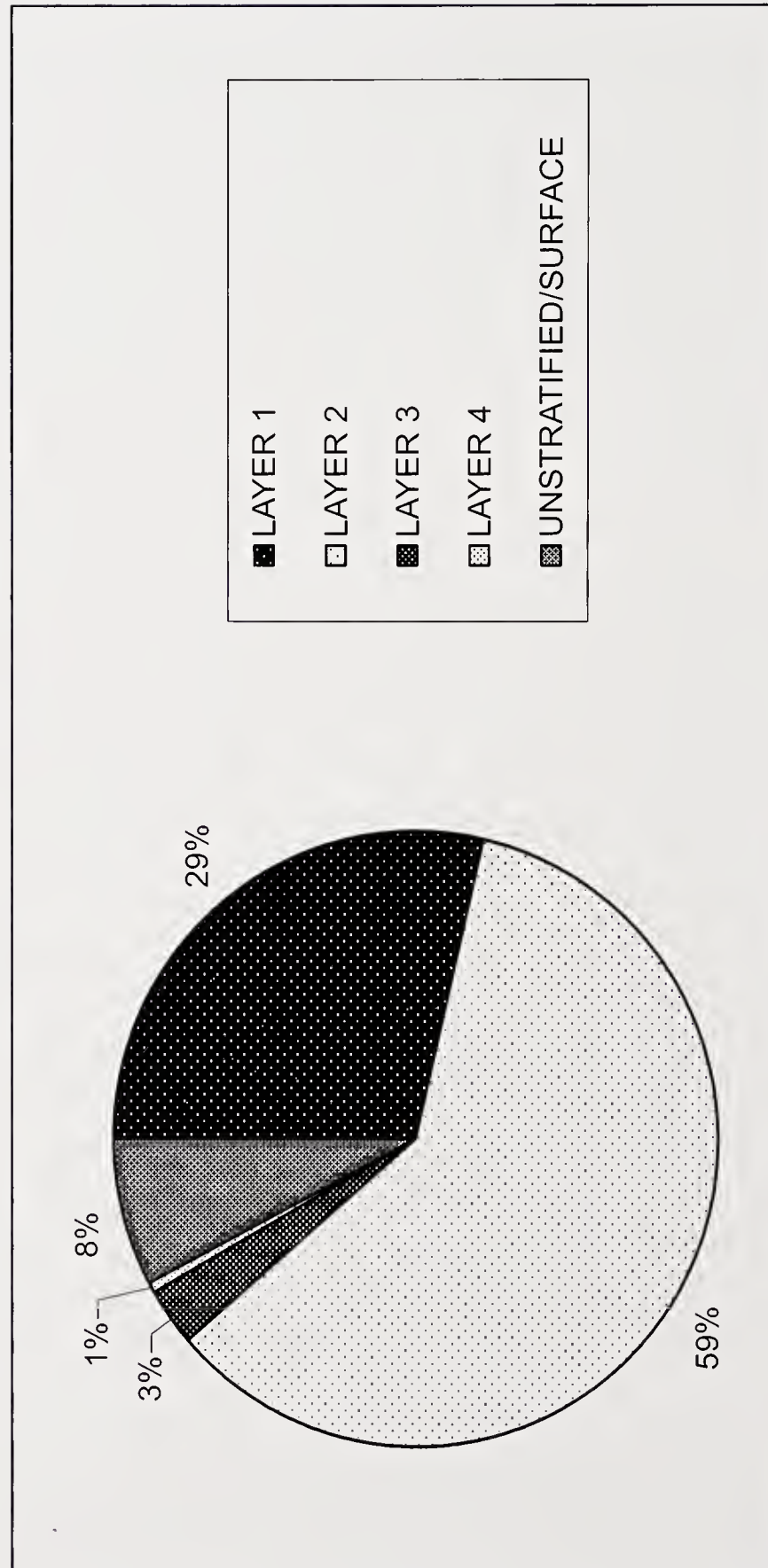


Fig. 25

## MATERIAL-WISE CLASSIFICATION OF BEADS TARKHANEWALA-DERA

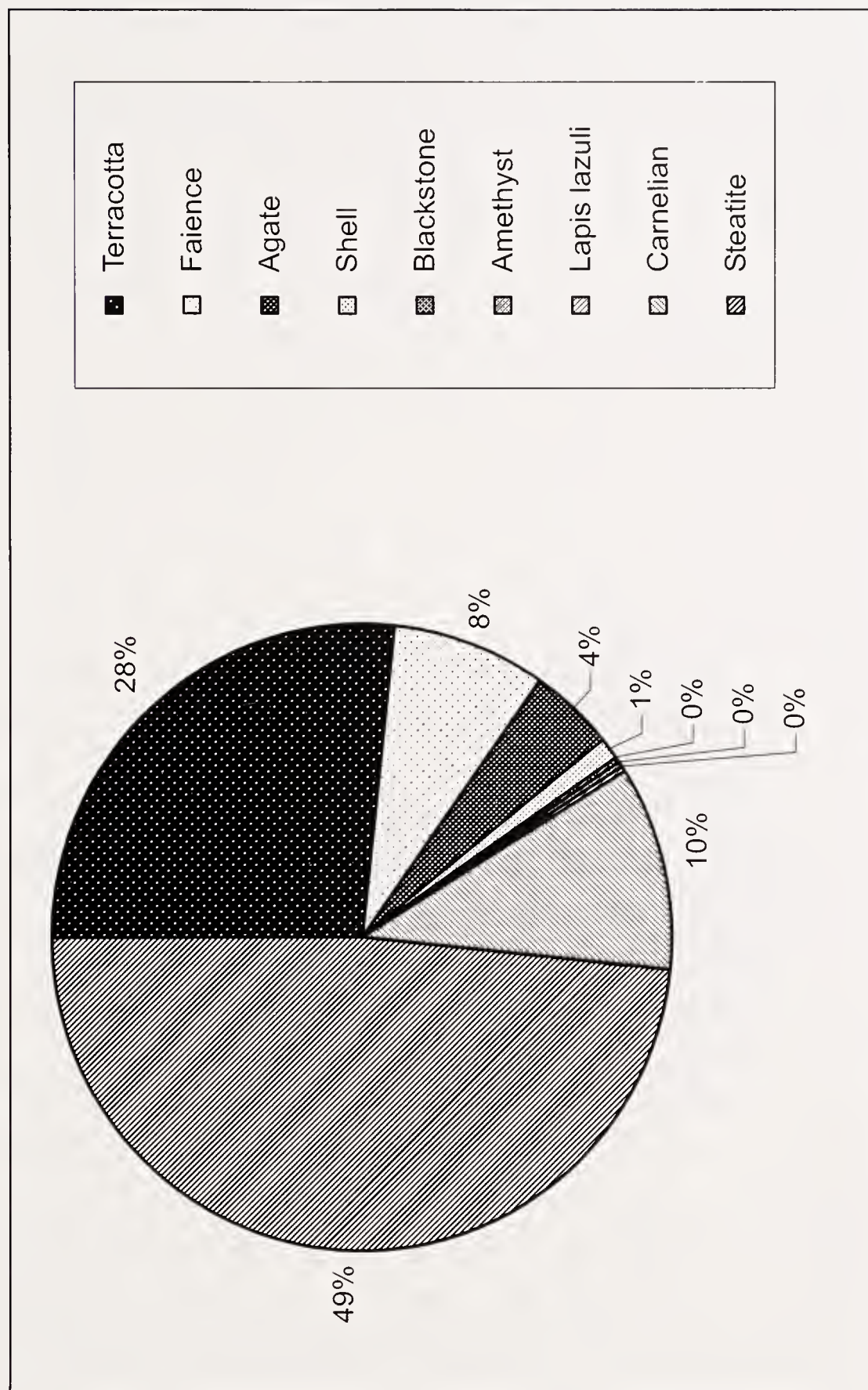


Fig. 26



TABLE-IV  
 LAYER-WISE DISTRIBUTION OF BEADS CLASSIFIED ACCORDING TO SHAPES  
 (See fig. 27)

Layer Shapes		1	2	3	4	Unstratified/ Surface	Total	Percentage
Barrel	Short	01	—	—	—	—	01	.26%
	Standard	04	02	—	01	—	07	1.87%
	Long	17	15	03	01	05	41	10.96%
Cylinder	Short	06	05	—	—	04	15	4.01%
	Standard	—	10	01	—	01	12	3.20%
	Long	08	03	01	—	01	13	3.47%
Tubular	Short	—	—	—	—	—	—	—
	Standard	—	01	—	—	—	01	.26%
	Long	04	01	—	—	—	05	1.33%
Biconvex	Short	01	02	—	—	—	03	.80%
	Standard	04	03	—	—	01	08	2.13%
	Long	—	02	—	—	—	02	.53%
Bicone	Short	26	27	01	—	08	62	16.57%
	Standard	04	15	—	—	02	21	5.61%
	Long	06	05	01	—	01	13	3.47%
Spherical		21	11	04	—	05	41	10.96%
Disc		03	97	01	—	—	101	27%
Gadrooned		—	01	—	—	—	01	.26%
Micro beads		—	22	—	—	—	22	5.88%
Bead spacer		01	02	—	—	01	04	1.06%
Cube		01	—	—	—	—	01	.26%
		107	224	12	02	29	374	

# SHAPE-WISE DISTRIBUTION OF BEADS

## TARKHANEWALA-DERA

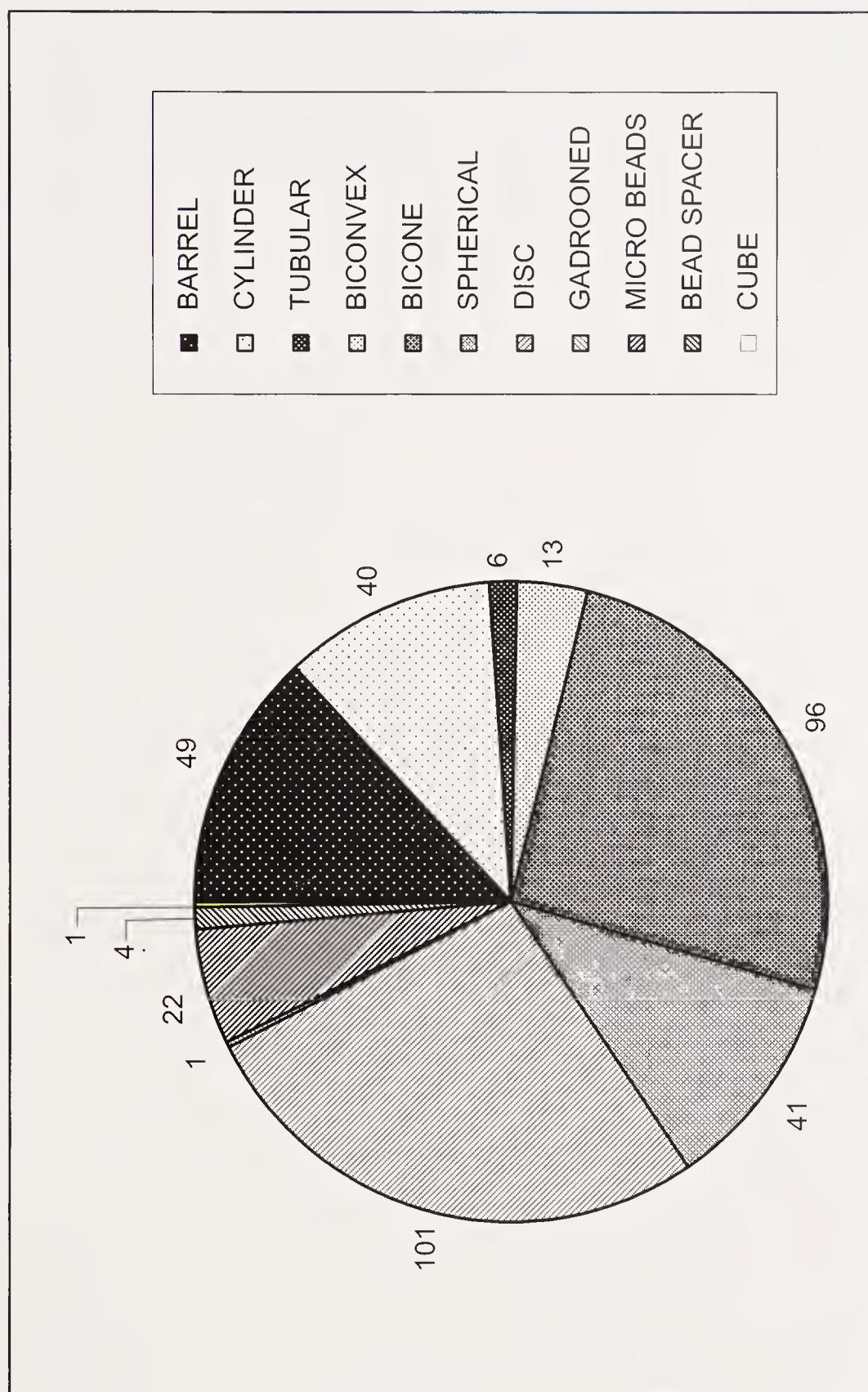



Fig. 27



**C. GRAFFITI :****Pl. LI**

Prefiring deep incision on the base of a storage jar of a coarse fabric, thick red ware. It is a complete sign depicting. 

From layer no. 2 (Reg. no. 430)

**6. BEADS**

The excavations yielded three hundred seventy-four beads of which terracotta accounts for one hundred. Of the remaining two hundred seventy-four, one hundred eighty-one are of steatite, thirty-nine of carnelian (including two etched variety), thirty of faience, sixteen of agate, five of shell and one each of black stone, amethyst and lapis lazuli (see table III).

The distribution of beads is as under: layer (1)-one hundred seven; layer (2)-two hundred seventy-four; layer (3)-twelve; layer (4)-two and rest twenty-nine were found from the surface. The represented shapes<sup>1</sup> of the beads are barrel, cylinder, tubular, biconvex, bicone, spherical, disc, gadrooned, micro beads, cubes etc. Besides, mention may be made of four terracotta spacers found from the excavation (See table IV). The following beads are illustrated:-

**A. STONE****i. Agate**

This site yielded sixteen agate beads. Those are described below:

**Pl. LII**

1. Long truncated barrel circular.  
From layer no.2 (Reg.no.395).

2. Standard truncated biconvex circular.  
From the surface (Reg.no.20).
3. Standard truncated barrel circular.  
From layer no.1 (Reg.no.249).
4. Standard truncated barrel oval.  
From layer no.1 (Reg.no.367).
5. Long truncated barrel elliptical.  
From layer no.2 (Reg.no.315).
6. Long truncated barrel elliptical.  
From layer no.1 (Reg.no.157).
7. Long truncated barrel elliptical.  
From layer no.2 (Reg.no.283).
8. Long truncated cylinder squarish.  
From the surface(Reg.no.09).
9. Long truncated barrel circular.  
From the surface (Reg.no.10).
10. Long truncated barrel circular.  
From layer no.1 (Reg.no.159).
11. Long truncated barrel elliptical.  
From layer no.2 (Reg.no.269).
12. Long truncated barrel circular.  
From layer no.1 (Reg.no.114).
13. Long chamfered barrel circular.  
From the surface (Reg.no.12).
14. Long truncated cylinder.  
From layer no.3 (Reg.no.321).
15. Long truncated barrel circular.  
From layer no.3 (Reg.no.319).
16. Long truncated barrel circular.  
From layer no.1 (Reg.no.75).

**ii. Carnelian**

This site yielded thirty-nine carnelian beads. Those are described below:

**Pl. LIII**

1. Short chamfered bicone circular.  
From layer no.1 (Reg.no.142).

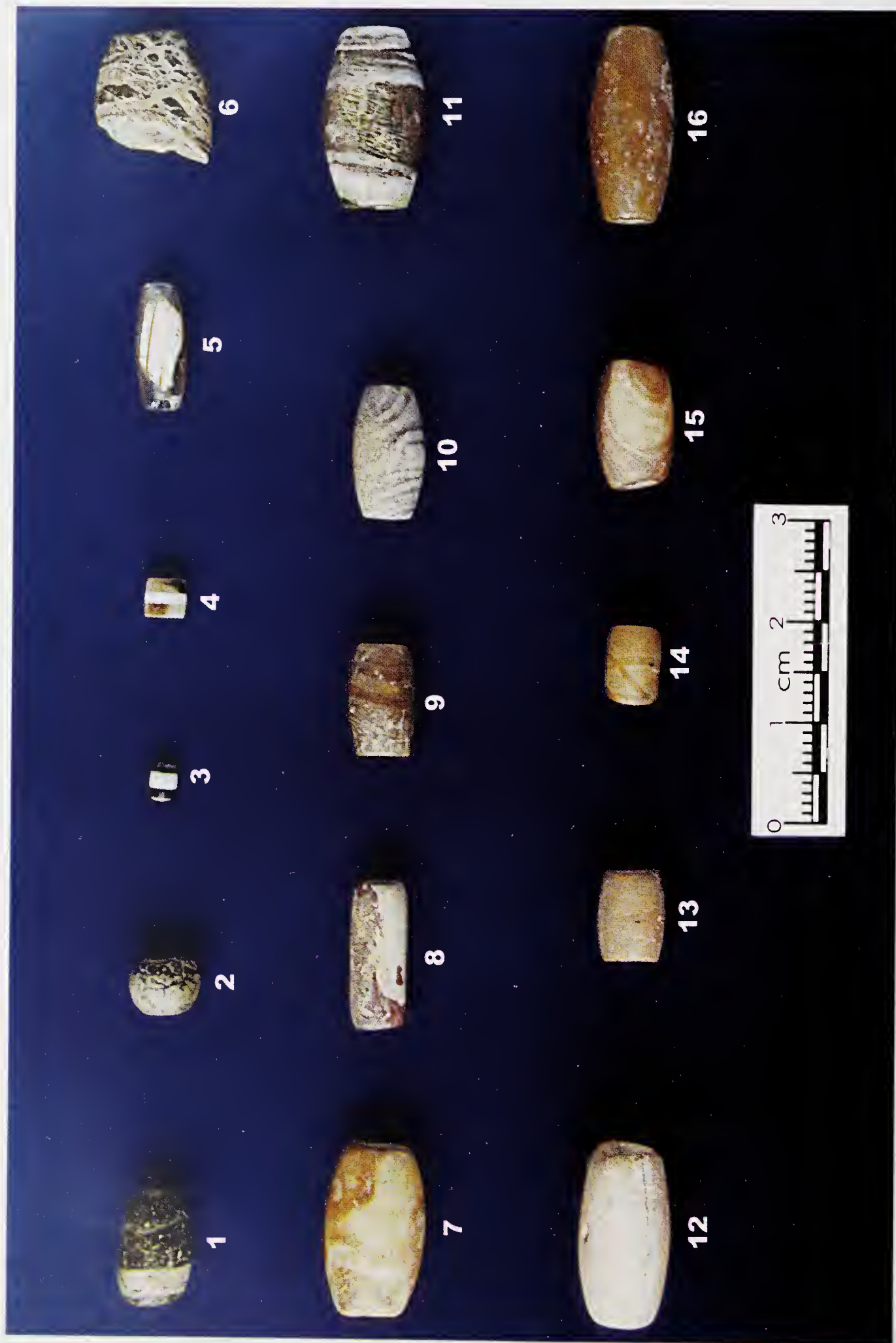
<sup>1</sup> H.C.Beck, 'Classification and Nomenclature of Beads and Pendants,' *Archaeologia*, No. LXXVII,(1928), pp. 1 ff.





Pl. LI. Tarkhanewala-Dera : Fragment of a storage jar bearing pre-firing graffiti. See p. 126





Pl. LII. Tarkhanewala-Dera : Agate beads. See p. 126

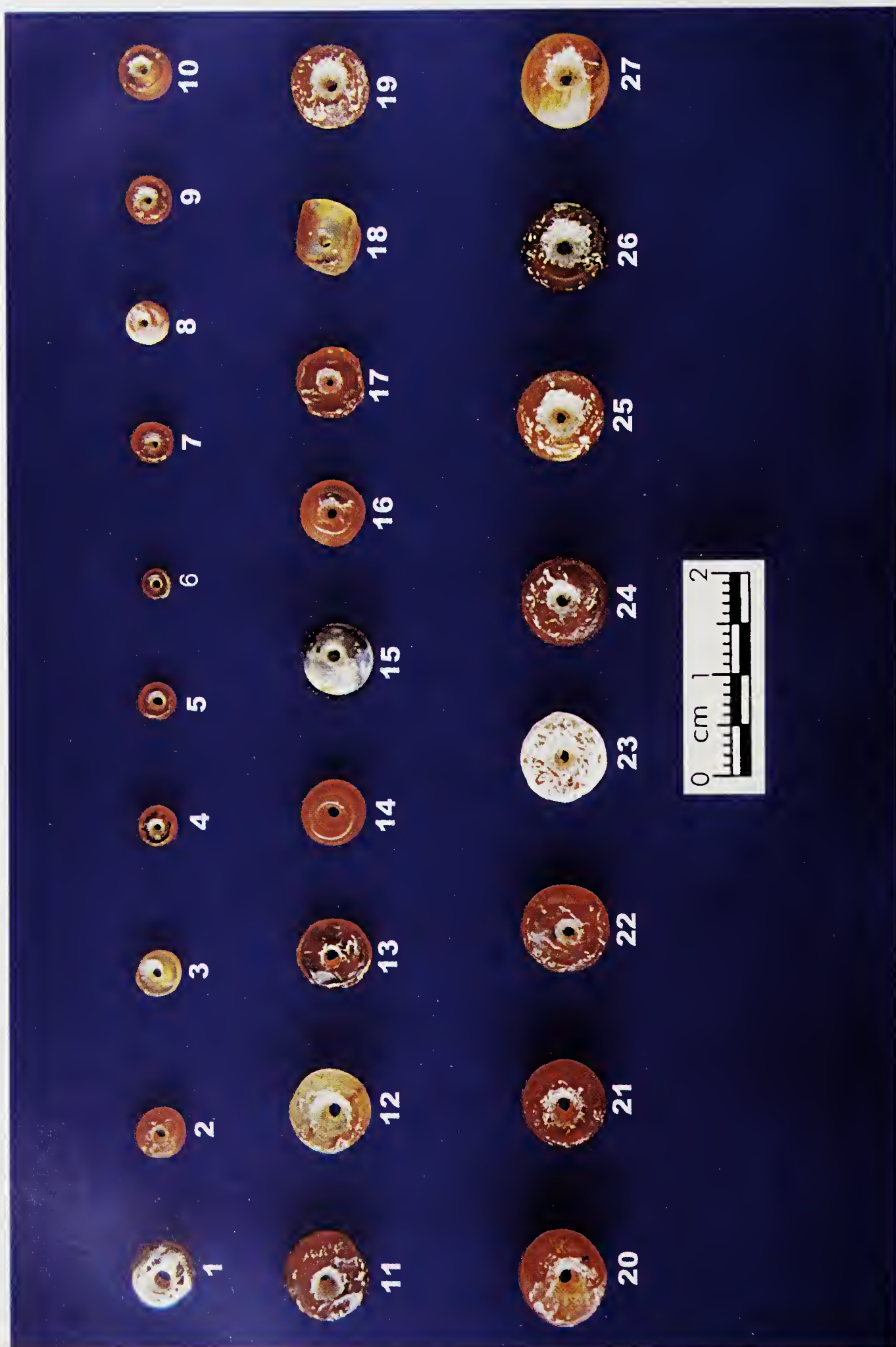
2. Short truncated bicone circular.  
From layer no.1 (Reg.no.178).
3. Short truncated bicone circular.  
From layer no.1 (Reg.no.217).
4. Short truncated bicone circular.  
From layer no.1 (Reg.no.388).
5. Short truncated bicone circular.  
From layer no.1 (Reg.no.232).
6. Short truncated biconvex circular.  
From layer no.1 (Reg.no.127).
7. Short truncated bicone circular.  
From layer no.1 (Reg.no.138).
8. Short truncated bicone circular.  
From layer no.1 (Reg.no.201).
9. Short truncated bicone circular.  
From layer no.2 (Reg.no.413).
10. Short truncated bicone circular.  
From layer no.1 (Reg.no.241).
11. Short truncated bicone circular (unfinished).  
From layer no.2 (Reg.no.106).
12. Standard truncated biconvex circular.  
From layer no.1 (Reg.no.389).
13. Short truncated bicone circular (disc)  
From layer no.2 (Reg.no.265).
14. Short truncated bicone circular.  
From the surface (Reg.no.28).
15. Spherical.  
From layer no.1 (Reg.no.74).
16. Short truncated bicone circular.  
From layer no.1 (Reg.no.68).
17. Short truncated bicone circular (disc).  
From layer no.1 (Reg.no.358).
18. Cube(?) (unfinished).  
From layer no.1 (Reg.no.236).
19. Standard truncated bicone circular.  
From layer no.2 (Reg.no.216).
20. Standard truncated biconvex circular.  
From layer no.1 (Reg.no.220).
21. Standard truncated biconvex circular.  
From layer no.1 (Reg.no.64).

22. Short bicone circular (disc).  
From the surface (Reg.no.21).
23. Short bicone circular (disc).  
From the surface (Reg.no.14).
24. Short truncated bicone circular.  
From layer no.2 (Reg.no.215).
25. Standard truncated biconvex circular.  
From layer no.2 (Reg.no.384).
26. Standard truncated bicone circular.  
From layer no.1 (Reg.no.174).
27. Standard truncated bicone circular.  
From layer no.2 (Reg.no.111).

#### **Pl. LIV**

1. Etched carnelian standard barrel lenticular  
with single eye design.  
From layer no.2 (Reg.no.316).
2. Standard cylinder circular.  
From layer no.3 (Reg.no.336).
3. Short bicone circular.  
From layer no.2 (Reg.no.419).
4. Etched carnelian short barrel lenticular with  
single eye design.  
From layer no.1 (Reg.no.192).
5. Long barrel circular.  
From layer no.2 (Reg.no.204).
6. Long barrel circular.  
From layer no.2 (Reg.no.406).
7. Long biconvex circular.  
From layer no.2 (Reg.no.198).
8. Long truncated cylinder circular.  
From layer no.2 (Reg.no.78).
9. Long truncated barrel circular.  
From layer no.2 (Reg.no.254).
10. Long truncated barrel circular.  
From the surface (Reg.no.25).
11. Long cylinder circular.  
From layer no.1 (Reg.no.236).
12. Long truncated barrel circular.  
From the surface (Reg.no.04).





Pl. LIII. Tarkhanewala-Dera : Carnelian beads. See pp. 126, 129



Pl. LIV. Tarkhanewala-Dera : Carnelian beads. See p. 129



**B. TERRACOTTA**

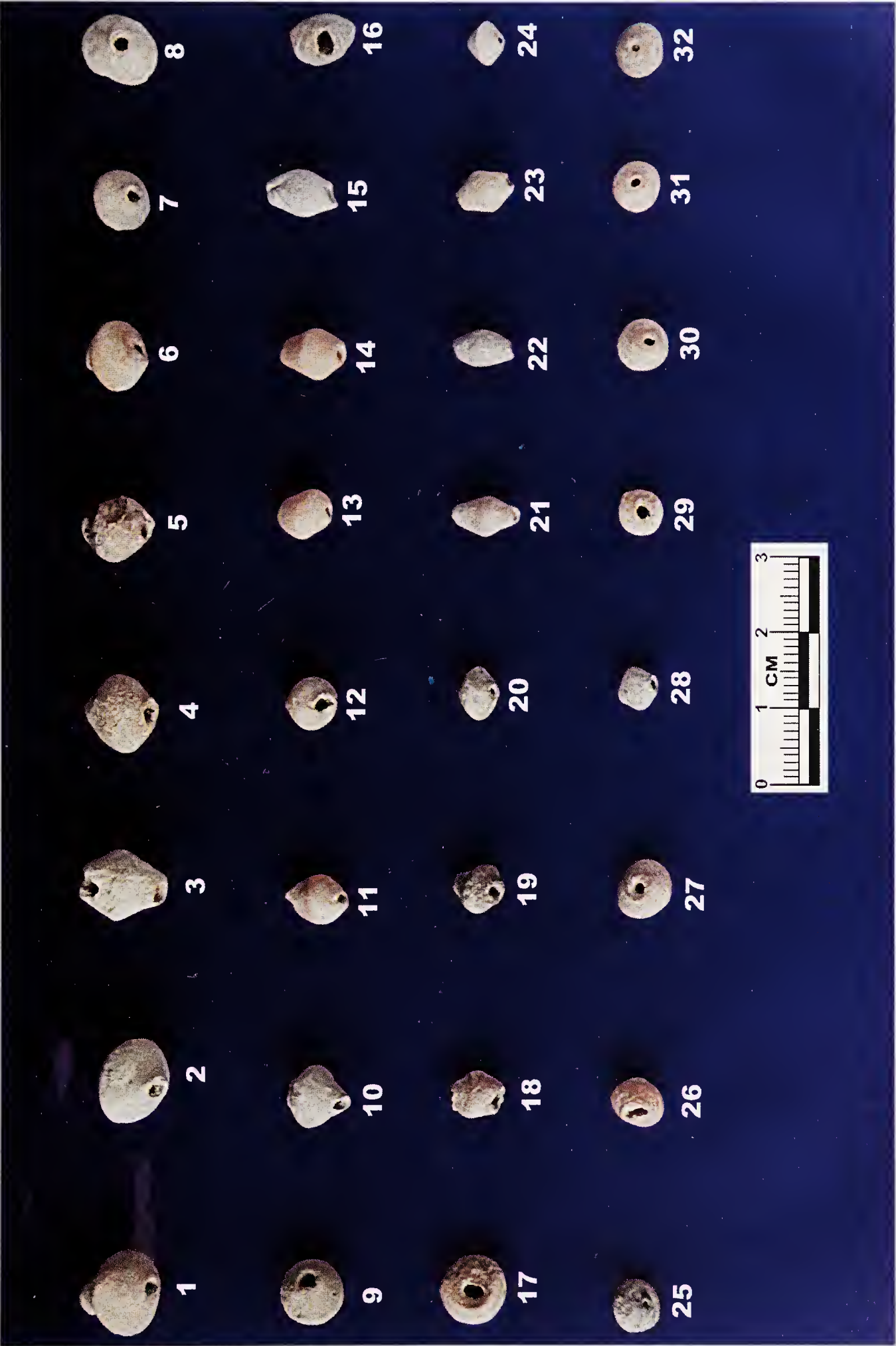
This site yielded one hundred terracotta beads. The selected examples are described below:

**Pl. LV**

1. Long bicone circular.  
From layer no.1 (Reg.no.169).
2. Short bicone circular.  
From pit 2 sealed by layer no.2 (Reg.no.99).
3. Long bicone circular.  
From layer no.1 (Reg.no.187).
4. Standard bicone circular.  
From layer no.2 (Reg.no.197).
5. Long bicone circular.  
From layer no.3 (Reg.no.420).
6. Standard bicone circular.  
From layer no.2 (Reg.no.256).
7. Short bicone circular.  
From layer no.2 (Reg.no.407).
8. Short bicone circular.  
From layer no.1 (Reg.no.268).
9. Standard bicone circular.  
From layer no.1 (Reg.no.237).
10. Standard bicone circular.  
From layer no.2 (Reg.no.414).
11. Long bicone circular.  
From layer no.2 (Reg.no.108).
12. Short bicone circular.  
From layer no.1 (Reg.no.240).
13. Standard bicone circular.  
From layer no.1 (Reg.no.357).
14. Long bicone circular.  
From layer no.1 (Reg.no.390).
15. Long bicone circular.  
From layer no.2 (Reg.no.270).
16. Short bicone circular.  
From layer no.2 (Reg.no.196).
17. Short bicone circular.  
From layer no.1 (Reg.no.239).
18. Standard bicone circular.  
From layer no.2 (Reg.no.396).
19. Standard bicone circular.  
From the surface (Reg.no.47).
20. Short bicone circular.  
From the surface (Reg.no.24).
21. Long barrel circular.  
From layer no.3 (Reg.no.327).
22. Long barrel circular.  
From layer no.3 (Reg.no.381).
23. Long bicone circular.  
From layer no.2 (Reg.no.260).
24. Short bicone circular.  
From layer no.1 (Reg.no.291).
25. Short bicone circular.  
From layer no.1 (Reg.no.152).
26. Short bicone circular.  
From layer no.2 (Reg.no.107).
27. Short bicone circular.  
From layer no.1 (Reg.no.360).
28. Short bicone circular.  
From layer no.1 (Reg.no.173).
29. Short bicone circular.  
From layer no.1 (Reg.no.153).
30. Short bicone circular.  
From layer no.1 (Reg.no.275).
31. Short bicone circular.  
From layer no.1 (Reg.no.346).
32. Short bicone circular.  
From layer no.1 (Reg.no.160).

**Pl. LVI**

1. Short truncated bicone circular with impressed design.  
From layer no.2 (Reg.no.333).
2. Short truncated bicone circular.  
From layer no.2 (Reg.no.90).
3. Long truncated bicone circular.  
From the surface (Reg.no.44).



Pl. LV. Tarkhanewala-Dera : Terracotta beads. See p. 132



4. Short truncated bicone circular.  
From layer no.2 (Reg.no.427).
5. Short truncated bicone circular.  
From layer no.2 (Reg.no.120).
6. Short biconvex circular with flat band along  
the periphery.  
From layer no.2 (Reg.no.230).
7. Short bicone circular.  
From layer no.1 (Reg.no.184).
8. Long bicone circular.  
From layer no.1 (Reg.no.212)
9. Standard truncated bicone circular.  
From layer no.2 (Reg.no.370).
10. Short truncated bicone circular.  
From layer no.1 (Reg.no.296).
11. Short bicone circular.  
From layer no.1 (Reg.no.98).
12. Long bicone circular.  
From layer no.1 (Reg.no.342).
13. Long bicone circular.  
From layer no.2 (Reg.no.284).
14. Short bicone circular.  
From layer no.1 (Reg.no.149).
15. Long bicone circular.  
From layer no.2 (Reg.no.305).
16. Short bicone circular.  
From layer no.2 (Reg.no.330).

**Pl. LVII**

1. Spherical.  
From layer no.1 (Reg.no.13).
2. Long barrel lenticular.  
From layer no.1 (Reg.no.422)
3. Spherical.  
From layer no.1 (Reg.no.85).
4. Long biconvex lenticular.  
From layer no.1 (Reg.no.410).
5. Disc  
From layer no.2 (Reg.no.104).
6. Long biconvex lenticular.  
From layer no.1 (Reg.no.136).

**Pl. LVIII**

1. Long spacer, rectangular in plan and section.  
Two perforations.  
From the surface (Reg.no.32).
2. Long spacer, ellipsoid, elliptical. Three  
perforations.  
From layer no.2 (Reg.no.348).
3. Long spacer, rectangular in plan and section.  
Two perforations.  
From pit 2 sealed by layer no.2 (Reg.no.100).
4. Long spacer, cylinder, rectangular with  
convex top. One complete and one broken  
perforation.  
From layer no.1 (Reg.no.238).

**Pl. LIX**

1. Long cylinder circular.  
From layer no.1 (Reg.no.176).
2. Long barrel circular.  
From layer no.1 (Reg.no.359).
3. Long truncated barrel circular.  
From layer no.2 (Reg.no.386).
4. Long barrel circular.  
From layer no.1 (Reg.no.175).
5. Long barrel circular.  
From layer no.2 (Reg.no.300).
6. Long barrel circular.  
From layer no.1 (Reg.no.353).
7. Long bicone circular.  
From layer no.1 (Reg.no.70).
8. Long bicone circular.  
From layer no.1 (Reg.no.141).
9. Long barrel circular with incised spiral  
design.  
From layer no.1 (Reg.no.124).
10. Long barrel circular with incised spiral  
design.  
From layer no.2 (Reg.no.302).
11. Long truncated barrel circular with incised  
spiral design.  
From layer no.2 (Reg.no.408).



Pl. LVI. Tarkhanewala-Dera : Terracotta beads. See pp. 132, 134





Pl. LVII. Tarkhanewala-Dera : Terracotta beads. See p. 134





Pl. LVIII. Tarkhanewala-Dera : Spacers. See p. 134



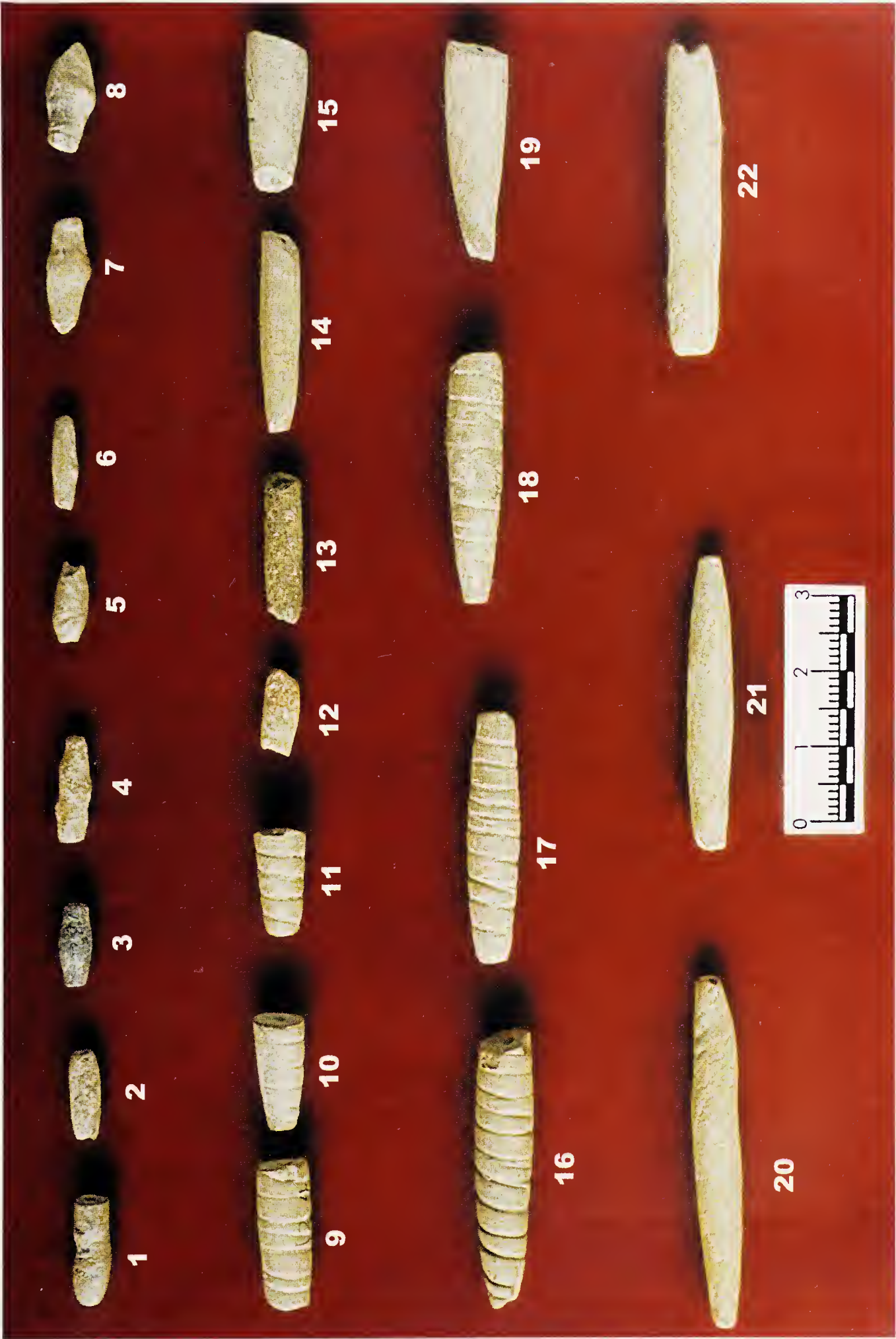
12. Long cylinder circular.  
From layer no.1 (Reg.no.181).
13. Long cylinder circular.  
From layer no.1 (Reg.no.186).
14. Long barrel circular.  
From the surface (Reg.no.179).
15. Long barrel circular.  
From layer no.1 (Reg.no.221).
16. Long barrel circular with incised spiral design.  
From layer no.1 (Reg.no.132).
17. Long truncated barrel circular with incised spiral design.  
From layer no.1 (Reg.no.77).
18. Long barrel circular with incised spiral design.  
From layer no.1 (Reg.no.76).
19. Long barrel circular.  
From layer no.2 (Reg.no.375).
20. Long barrel circular.  
From layer no.1 (Reg.no.101).
21. Long barrel circular.  
From layer no.2 (Reg.no.264).
22. Long cylinder circular.  
From layer no.1 (Reg.no.150).
4. Short truncated cylinder circular.  
From the surface (Reg.no.50).
5. Short truncated bicone circular.  
From the surface (Reg.no.55).
6. Gadrooned.  
From layer no.2 (Reg.no.373).
7. Standard truncated cylinder circular.  
From the surface (Reg.no.08).
8. Standard truncated cylinder circular.  
From layer no.2 (Reg.no.289).
9. Short truncated biconvex oval.  
From layer no.2 (Reg.no.282).
10. Short truncated cylinder circular.  
From layer no.2 (Reg.no.243).
11. Short cylinder circular (disc), with transverse perforation.  
From layer no.2 (Reg.no.272).
12. Short cylinder circular (disc), with transverse perforation.  
From the surface (Reg.no.15).
13. Short cylinder circular (disc), with transverse perforation.  
From layer no.2 (Reg.no.416).
14. Disc (wafer).  
From layer no.1 (Reg.no.297).
15. Disc (wafer).  
From layer no.1 (Reg.no.343).
16. Disc (wafer).  
From layer no.2 (Reg.no.292).
17. Short cylinder circular (disc), with transverse perforation.  
From layer no.1 (Reg.no.130).
18. Short cylinder circular (disc), with transverse perforation.  
From pit 1 sealed by layer no.2 (Reg.no.95).
19. Short bicone circular (disc), with transverse perforation.  
From layer no.2 (Reg.no.417).
20. Short truncated bicone circular.  
From layer no.2 (Reg.no.263).

### **C. STEATITE**

This site yielded one hundred and eighty-one steatite beads. These are described below:

#### **Pl. LX**

1. Standard truncated bicone circular.  
From the surface (Reg.no.23).
2. Standard truncated biconvex circular.  
From layer no.1 (Reg.no.210).
3. Short truncated bicone circular.  
From the surface (Reg.no.17).



Pl. LIX. Tarkhanewala-Dera : Terracotta beads. See pp. 134, 138



21. Short truncated bicone circular.  
From layer no.2 (Reg.no.244).
22. Short truncated cylinder circular.  
From the surface (Reg.no.19).
23. Short truncated cylinder circular.  
From layer no.1 (Reg.no.349).
24. Spherical  
From the surface (Reg.no.46).
25. Spherical  
From layer no.1 (Reg.no.84).
26. Spherical  
From the surface (Reg.no.31).
27. Spherical  
From layer no.1 (Reg.no.162).
28. Spherical  
From layer no.1 (Reg.no.267).
29. Spherical  
From layer no.2 (Reg.no.229).
30. Spherical  
From layer no.3 (Reg.no.335).
31. Standard biconvex circular.  
From layer no.2 (Reg.no.421).
32. Standard biconvex circular.  
From layer no.2 (Reg.no.214).
33. Spherical  
From layer no.1 (Reg.no.361).
34. Spherical  
From layer no.1 (Reg.no.151).
35. Spherical  
From layer no.2 (Reg.no.323).
36. Spherical  
From layer no.1 (Reg.no.235).
37. Spherical  
From layer no.2 (Reg.no.271).

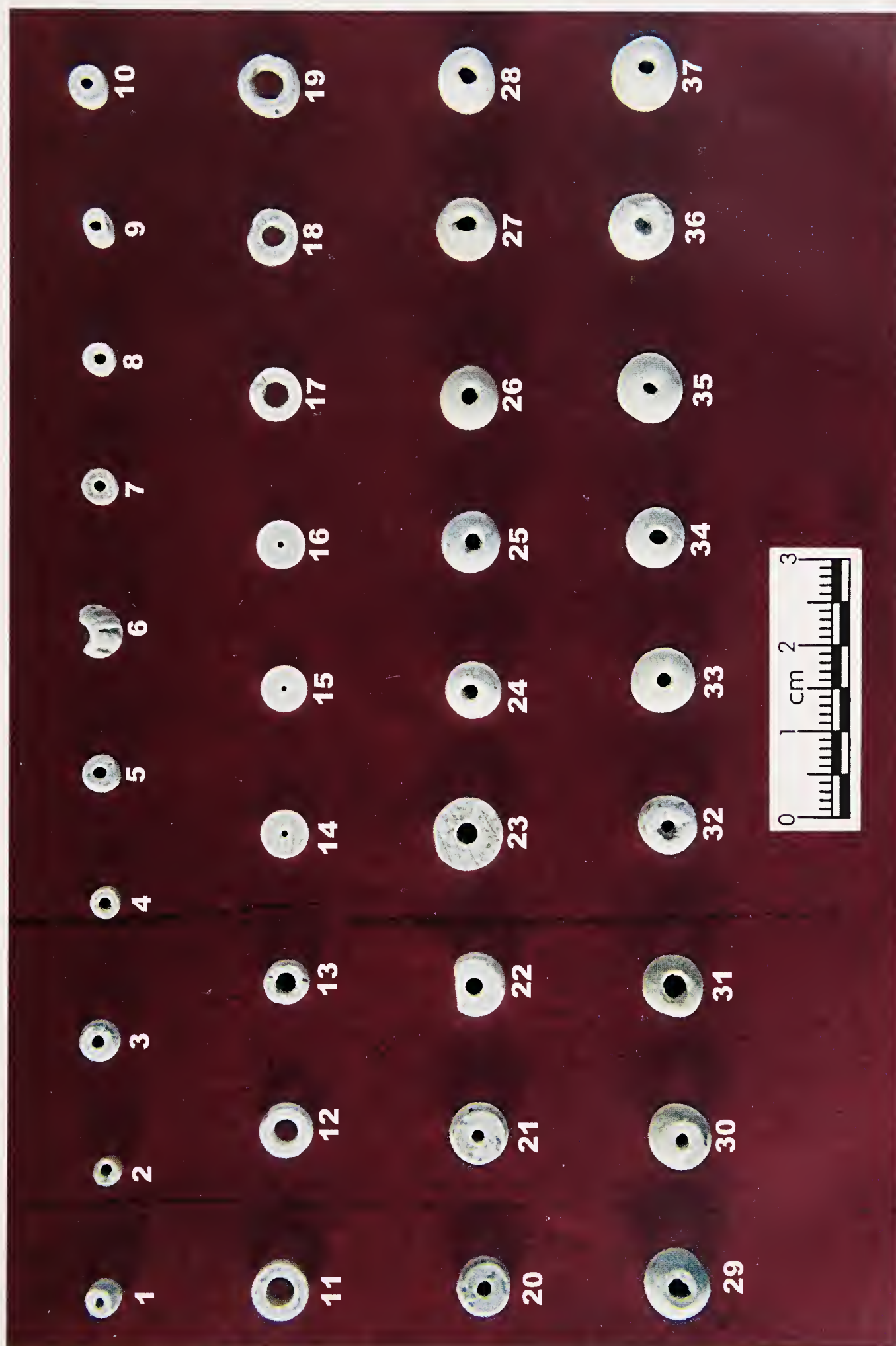
#### **Pl. LXI**

1. Painted steatite: Standard truncated barrel elliptical.  
From layer no.1 (Reg.no.69).
2. Painted steatite: Standard barrel lenticular.  
From layer no.4 (Reg.no.322).

3. Painted steatite: Standard barrel lenticular.  
From layer no.1 (Reg.no.82).
4. Painted steatite: Standard barrel lenticular.  
From layer no.2 (Reg.no.273).
5. Painted steatite: Long barrel oval.  
From layer no.2 (Reg.no.372).
6. Long cylinder circular.  
From layer no.1 (Reg.no.182).
7. Long truncated cylinder circular.  
From layer no.1 (Reg.no.401).
8. Long cylinder circular.  
From layer no.2 (Reg.no.280).
9. Short disc (wafer) circular.  
From layer no.2 (Reg.no.310).
10. Short disc (wafer) circular.  
From layer no.2 (Reg.no.409).
11. Short disc (wafer) circular.  
From layer no.3 (Reg.no.110).
12. Short disc (wafer) circular.  
From layer no.1 (Reg.no.170).
13. Short disc (wafer) circular.  
From layer no.2 (Reg.no.399).

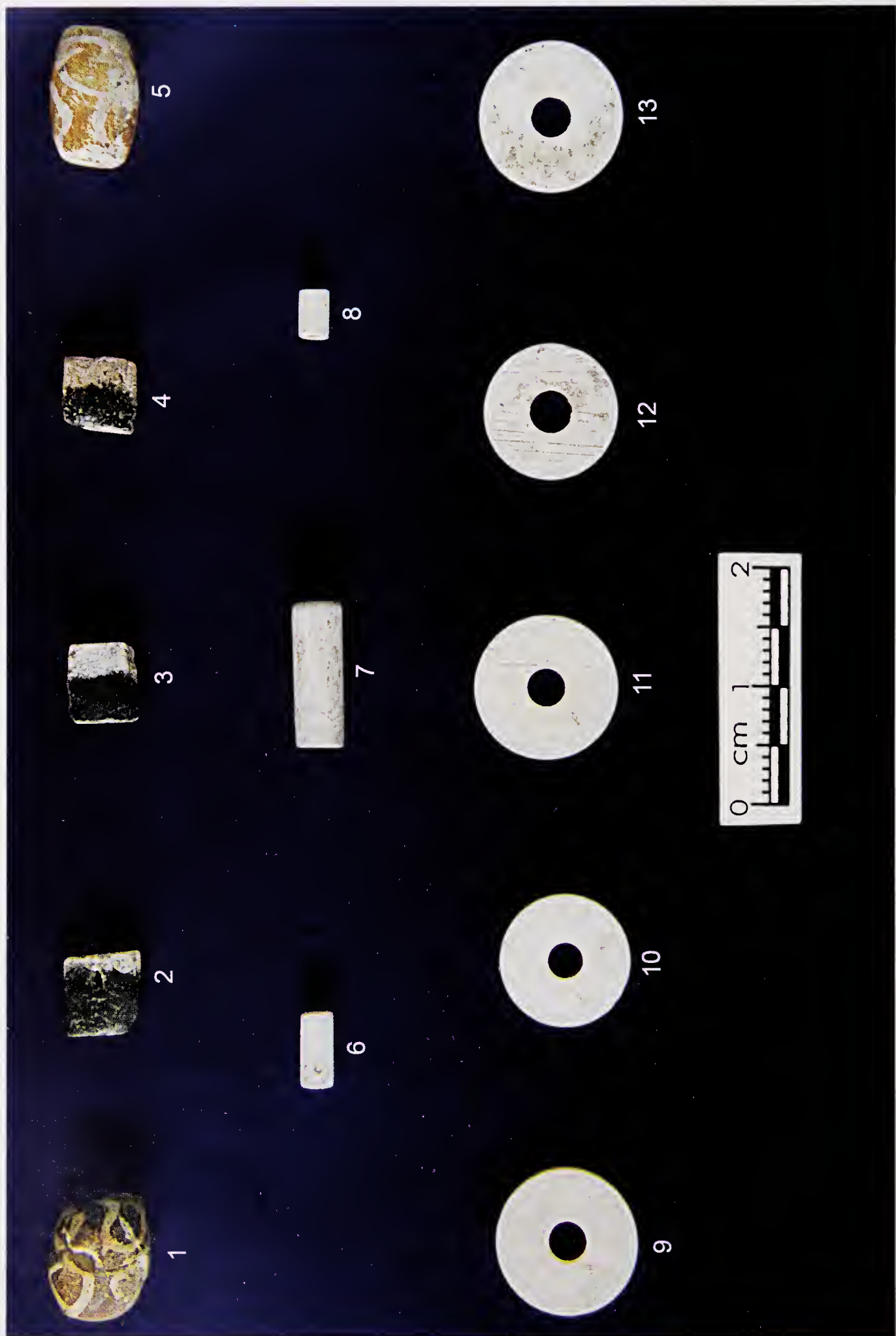
#### **Pl. LXII**

1. Micro beads, twelve in number.  
Standard truncated cylinder circular, four in number.  
Standard truncated bicone circular, four in number.  
Disc (wafer), twenty-four in number.  
From layer no.2 (Reg.no.429).
2. Micro beads, ten in number.  
Standard cylinder, four in number.  
Long cylinder, one in number.  
Short bicone, one in number.  
Standard truncated bicone circular, three in number.  
Disc (wafer), sixty-eight in number.  
From layer no. 2 (Reg. no. 325).

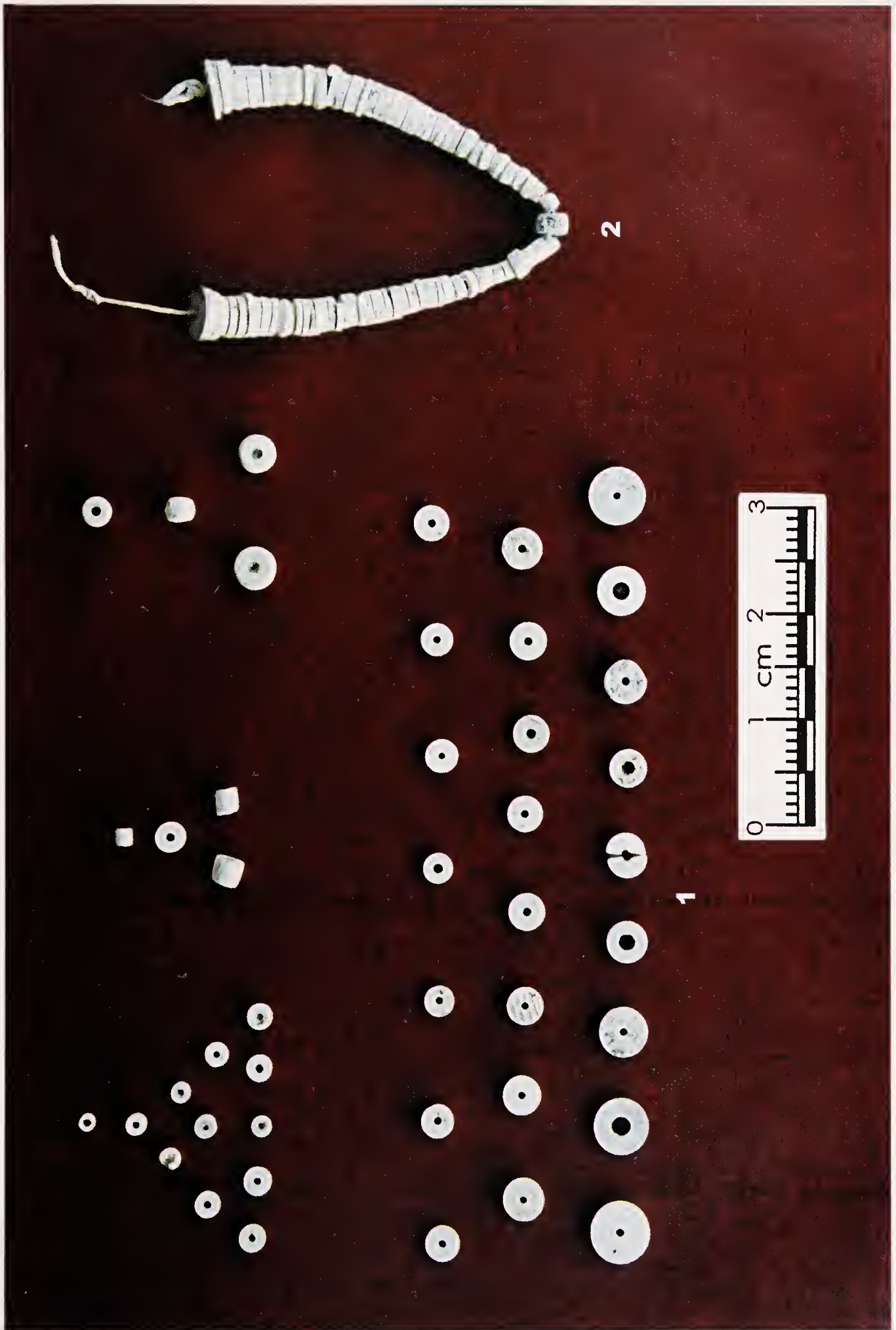


Pl. LX. Tarkhanewala-Dera : Steatite beads. See pp. 138, 140





Pl. LXI. Tarkhanewala-Dera : Steatite beads. See p. 140



Pl. LXII. Tarkhanewala-Dera : Steatite beads. See p. 140



**D. FAIENCE**

This site yielded thirty faience beads. These are described below:

**Pl. LXIII**

1. Spherical  
From layer no.1 (Reg.no.288).
2. Spherical  
From layer no.2 (Reg.no.385).
3. Spherical  
From layer no.1 (Reg.no.403).
4. Spherical  
From layer no.1 (Reg.no.392).
5. Spherical  
From layer no.2 (Reg.no.253).
6. Spherical  
From layer no.1 (Reg.no.278).
7. Spherical  
From layer no.3 (Reg.no.313).
8. Spherical  
From layer no.1 (Reg.no.231).
9. Spherical  
From layer no.2 (Reg.no.404).
10. Spherical  
From layer no.1 (Reg.no.115).
11. Spherical  
From layer no.2 (Reg.no.298).
12. Spherical  
From layer no.3 (Reg.no.326).
13. Spherical  
From layer no.1 (Reg.no.118).
14. Spherical  
From layer no.2 (Reg.no.426).
15. Spherical  
From the surface (Reg.no.57).
16. Spherical  
From layer no.1 (Reg.no.412).

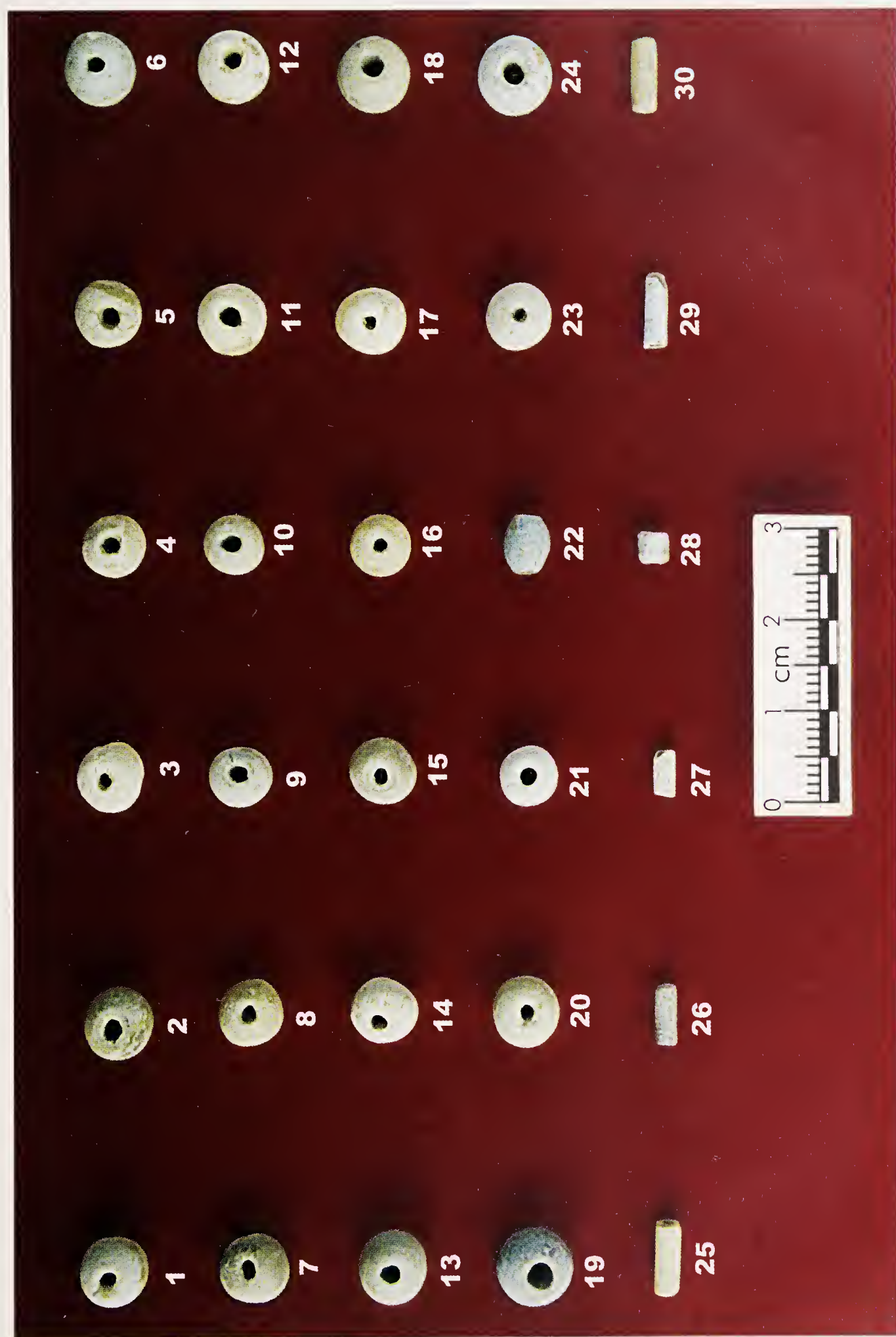
17. Spherical  
From layer no.3 (Reg.no.309).
18. Spherical  
From layer no.1 (Reg.no.424).
19. Spherical  
From layer no.2 (Reg.no.304).
20. Spherical  
From the surface (Reg.no.56).
21. Spherical  
From layer no.2 (Reg.no.324).
22. Long barrel circular  
From layer no.4 (Reg.no.195).
23. Spherical  
From layer no.1 (Reg.no.154).
24. Spherical  
From layer no.1 (Reg.no.295).
25. Long tubular circular.  
From layer no.1 (Reg.no.189).
26. Long tubular circular.  
From layer no.1 (Reg.no.226).
27. Long tubular circular.  
From layer no.1 (Reg.no.185).
28. Standard tubular circular.  
From pit 1 sealed by layer no.2 (Reg.no.94).
29. Long tubular circular.  
From layer no.1 (Reg.no.180).
30. Long tubular circular.  
From layer no.1 (Reg.no.285).

**E. OTHER MATERIAL**

This site yielded one black stone, one amethyst (?), one lapis lazuli and five shell beads. These are described below:

**Pl. LXIV**

1. Black stone: Spherical.  
From layer no.1 (Reg.no.339).
2. Amethyst (?): Short cylinder circular.  
From the surface (Reg.no.06).



Pl. LXIII. Tarkhanewala-Dera : Faience beads. See p. 144



3. Lapis lazuli: Short cylinder circular.  
From layer no.2 (Reg.no.432).
4. Shell: Short cylinder oval.  
From layer no.1 (Reg.no.163).
5. Shell: Short cylinder circular.  
From layer no.1 (Reg.no.121).
6. Shell: Short cylinder circular.  
From layer no.1 (Reg.no.340).
7. Shell: Short cylinder circular.  
From layer no.1 (Reg.no.61).
8. Shell: Standard cylinder circular.  
From layer no.2 (Reg.no.245).



Pl. LXIV. Tarkhanewala-Dera : Beads of other material. See pp. 144, 146





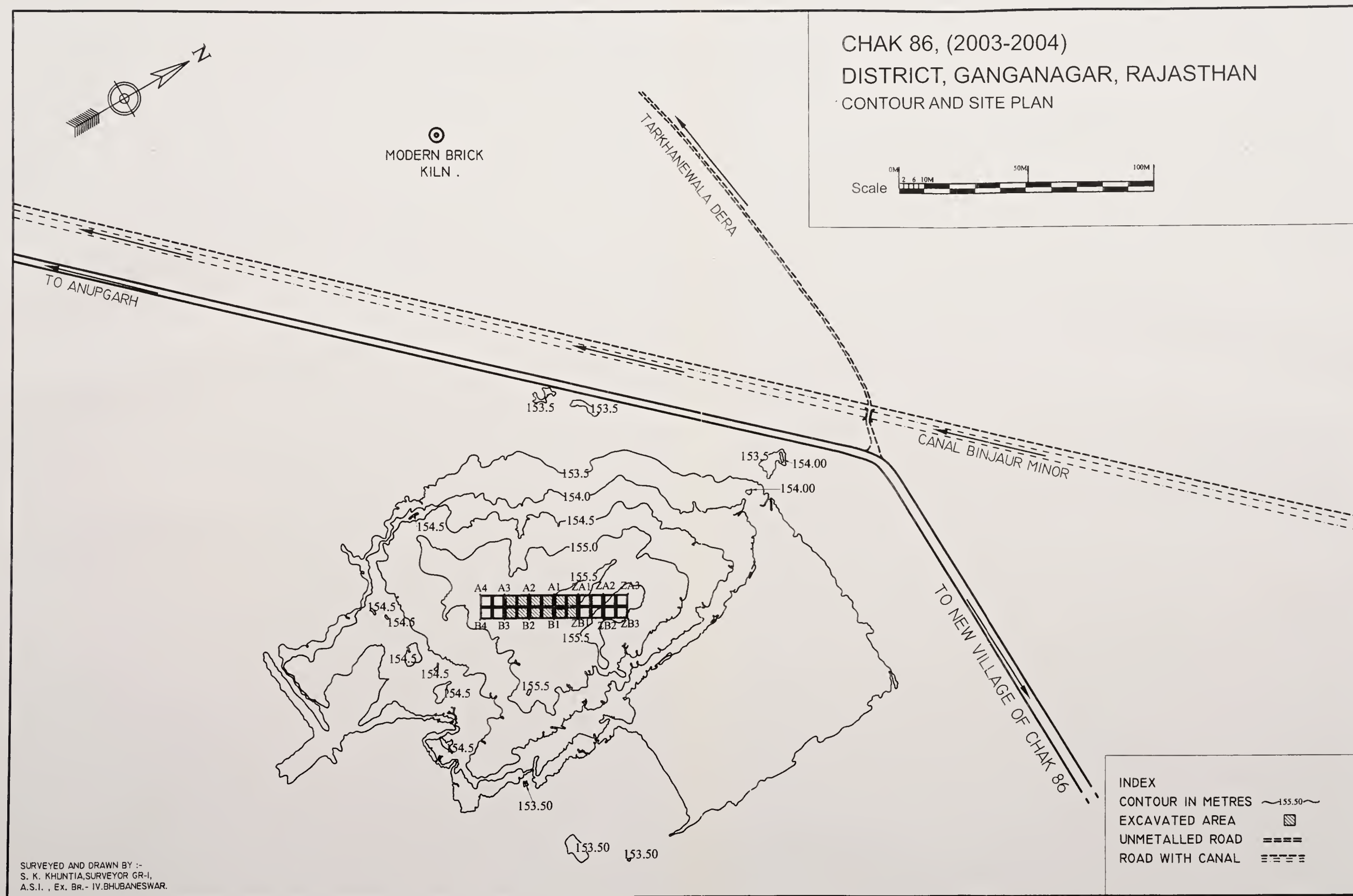


Fig. 28





# CHAK 86

## 1. THE CUTTING AND STRATIGRAPHY

The oval shaped eroded mound sprawling in an area of 5.5 hectares in the dried up course of ancient Sarasvati, contains a 2.5 m deposit of Painted Grey Ware settlement (Pl. LXV). The site was excavated by laying out horizontal trenches viz. A1, A2 and ZA1 (Fig. 28; pl. LXVI). The selected area was divided into squares of 10 x 10m. The Trench ZA1 was sunk at the highest point of the mound. The stratigraphy is well represented in Trench ZA1 Qd 2 where the natural soil was reached showing an undisturbed accumulation of five layers. (Pl. LXVII). These layers were corroborated in two other quadrants, which yielded similar finds. The single culture site witnessed two structural phases. The structural activity of phase I is attested to by two mud-brick structures and an oval shaped hearth. Phase I was succeeded by phase II marked by huts. These circular huts are traceable on plan and are seven in number. They denote the phase II of the structural activities at the site (Table V).

### **Trench A1, Qd 1 and 4, Section Looking west (Fig. 29)**

The Trench A1 was divided into four quadrants and all the four quadrants were excavated. Layer (1) is medium compact, sandy, light grey and its thickness varies from 18-20 cm. It contains brickbats and potsherds

of red, black, grey and black and red ware. In Qd 4 layer (1) merges with layer (2). Layer (2) has an average thickness of 20-30cm. It is represented by brown loose earth containing patches of ash, potsherds of red, black, grey and black-and-red ware. Layer (3) composed of ashy and burnt patches of earth and pieces of Painted Grey Ware, black-and-red ware potsherds, is comparatively loose in texture. This layer has been cut by Pit no.1 sealed by layer (2). The pit contains loose earth and ash. It has an average thickness of 60 cm. On top of this deposit were raised the structures 4 and 5 represented by the circular huts (Pl. LXX). This structural activity of phase II is sealed by layer (2). Below this lies layer (4), which is compact, and clayey and light brown in colour. It contains potsherd and its maximum thickness is 60 cm. At this level a large Painted Grey Ware bowl was found. On the top of this layer structures 1 and 2 made of mud-bricks and a hearth of clay (Structure 3) attributed to Phase I were exposed. Structure 1 made of four mud-bricks, takes a right turn (south-east) and is embedded in the section. Its orientation is north-east-south-west. Structure 2 made of one course is roughly 'L' shaped on plan and runs in north-south direction (Pl. LXVIII). Structure 3 is an oval shaped hearth made of clay. It has retained the top edge (Pl. LXIX). Being embedded in the section and sealed by layer (3), nature of these three structures could not be precisely ascertained. Layer (5) is about 1m in thickness,



CHAK 86, 2003-04  
DISTRICT GANGANAGAR, RAJASTHAN  
TRENCH A1, Qd 1 AND 4  
Section Looking West

Scale :- 0 1 2 m

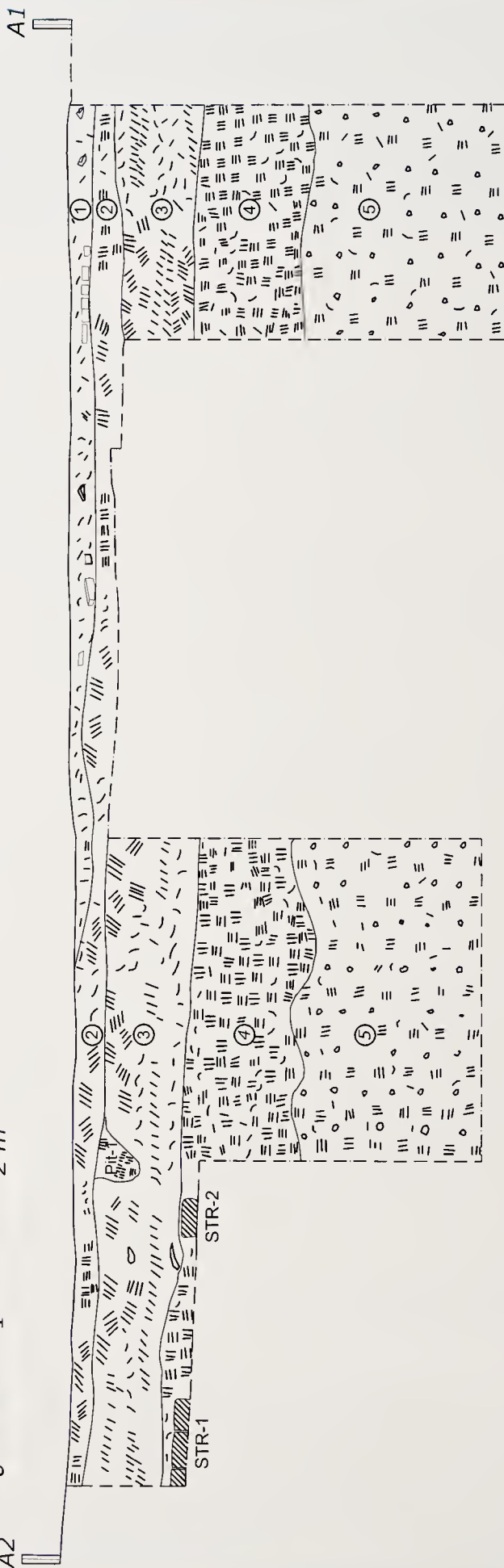


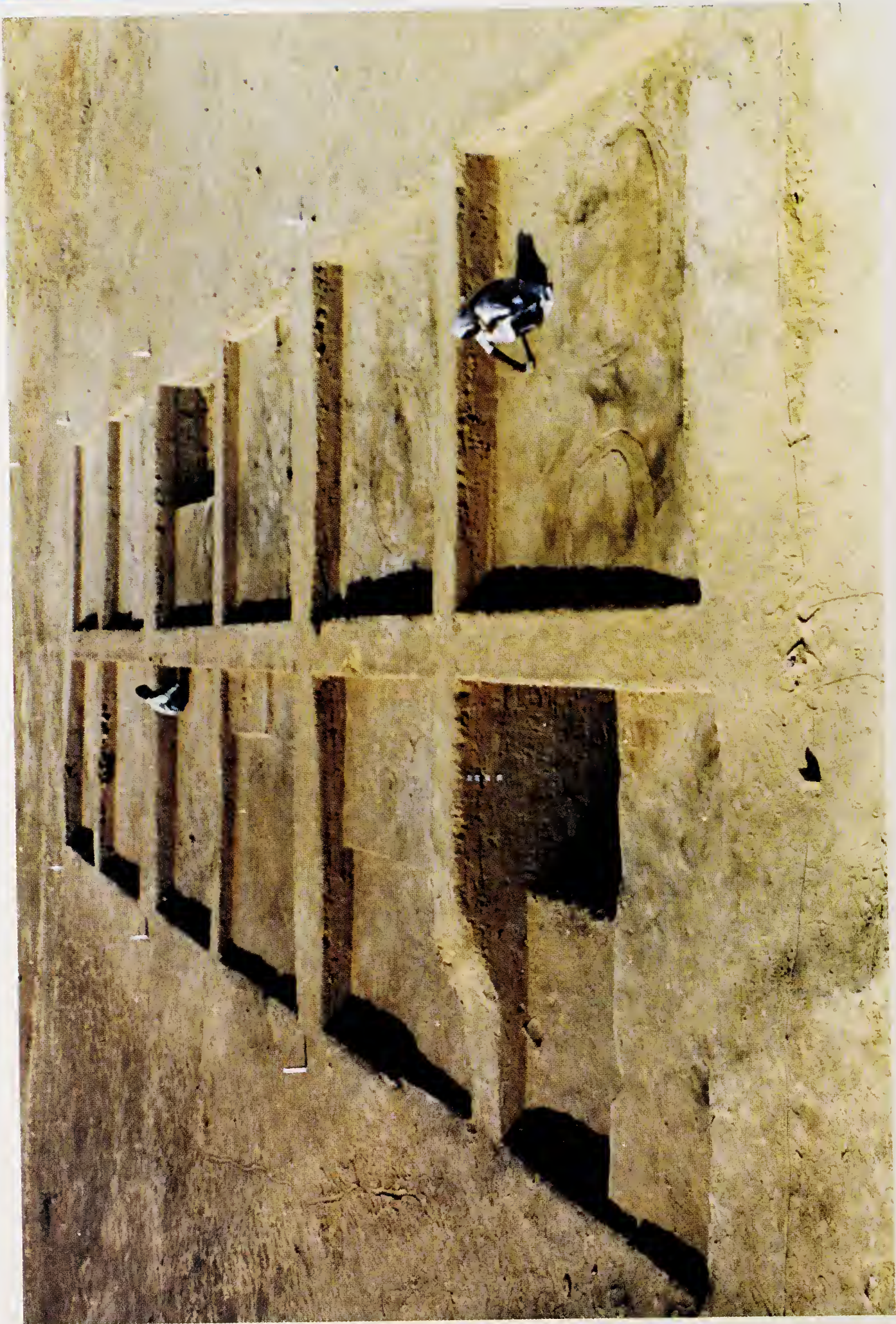
Fig. 29





*Pl. LXV. Chak 86 : A view. See p. 151*





*Pl. LXVI. Chak 86 : Layout of the trenches. See p. 151*





Pl. LXVII. Chak 86 : Trench ZA1, Qd2. See p. 151



hard clayey earth mixed with *kankars* and calcrete nodules and occasional tiny potsherds of red ware. The natural soil could not be reached.

### **Trench ZA1, Qd 1 and 4, Section Looking west (Fig. 30)**

The Trench ZA1 was sunk on the top of the mound. The section gives a fair picture of the structural activity of phase II. Layer (1) is composed of loose and sandy, light brown soil. It yielded a large quantity of potsherds. It has a maximum thickness of 20 cm. Layer (2) represented by semi-compact brownish earth, is about 20 cm thick. It contains brickbats and potsherds. Layer (3) witnessed the structural activity of phase II of the Painted Grey Ware culture represented by circular huts (Structures 6, 7, 8, 9 and 10). The deposit is composed of loose ashy earth, charred bones and charcoal denoting burning activity. It has also yielded various ceramic types *viz.*, Painted Grey Ware, red ware, black-and-red ware, black ware and grey ware. Layer (4) is sandy showing occasional patches of ash, bones and decreasing number of potsherds. It is about 65 cm in thickness. Layer (5) occurs below layer (4) and comprise hard clayey earth, *kankars* and calcrete nodules. Some tiny potsherds were also noticed in this level. Below this thick deposit was encountered the natural soil in Qd 2.

In addition to the above Qd 1, 2, 3 and 4 of Trench A2 were also excavated but no cultural remains were found.

## **2. STRUCTURES**

As per the stratigraphy discussed in the previous chapter habitation deposit could be assigned to two structural phases as below:

Phase I : Mud-brick structures and an oval shaped hearth

Phase II : Hutments

The structural activity during phase I was witnessed on layer (4). Two irregular mud-brick structures and an oval shaped hearth were excavated. These were partly exposed and found embedded in the section.

Phase II is represented by seven circular huts, traceable on plan, periphery being marked by ash, plenty of charred bones and burnt clay lumps. Probably the folks were living in circular huts made of bamboo or wooden poles with thatched roof. The possibility of their being utilized for storing grains and livestock can not be ruled out. The diameters of these huts vary from 1.65 m to 2.50 m and the thickness of the perimeter of these circular huts varies from 17 cm to 38 cm. No evidence of bathroom or sanitary arrangement could be discerned. Notably not a single metal object or terracotta figurine was found from these structures. As per the cross section, the huts were represented by a deposit (35 cm — 40 cm) of burnt material. These structures exposed in trenches *viz.*, A1, Qd 1 and 4; ZA1, Qd 1 and 4, are catalogued below:

### **Catalogue of Structures**

**Figs. 31-32; pls. LXVIII-LXXIII.**

#### **Structure 1**

1. Location : Square A1, Quadrant no.4
2. Type of structure : Mud-brick structure

CHAK 86, 2003-04  
 DISTRICT GANGANAGAR, RAJASTHAN  
 TRENCH ZA1, Qd 1 AND 4  
 Section Looking West

Scale :- 0 1 2 m

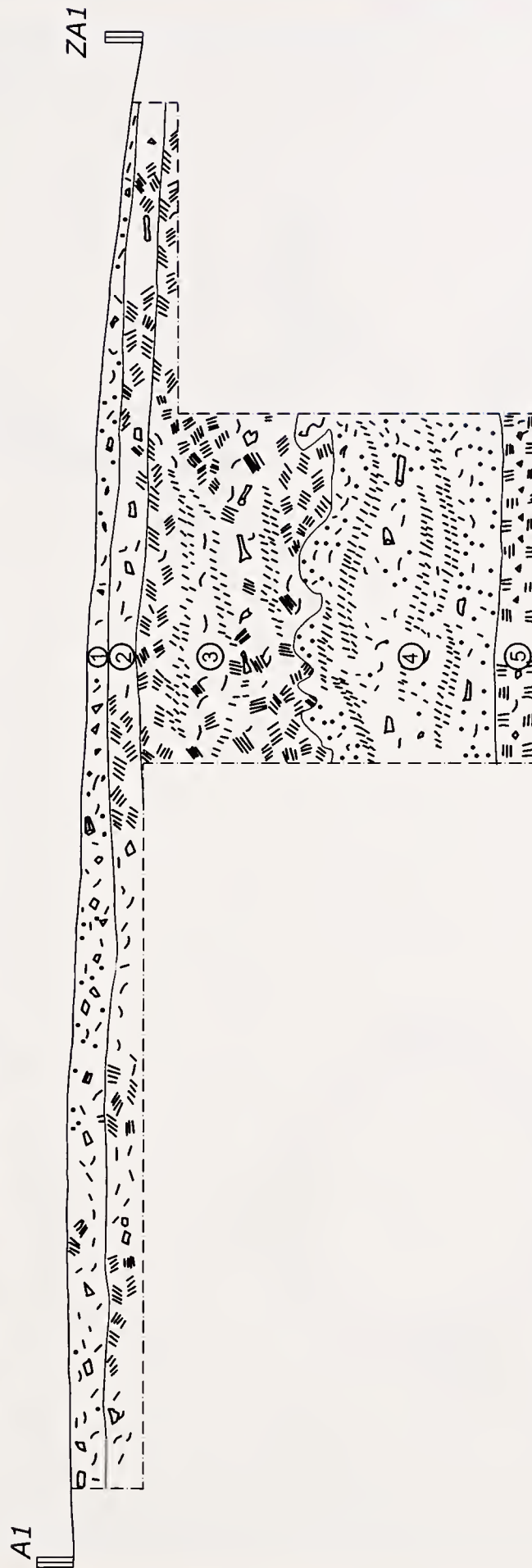


Fig. 30

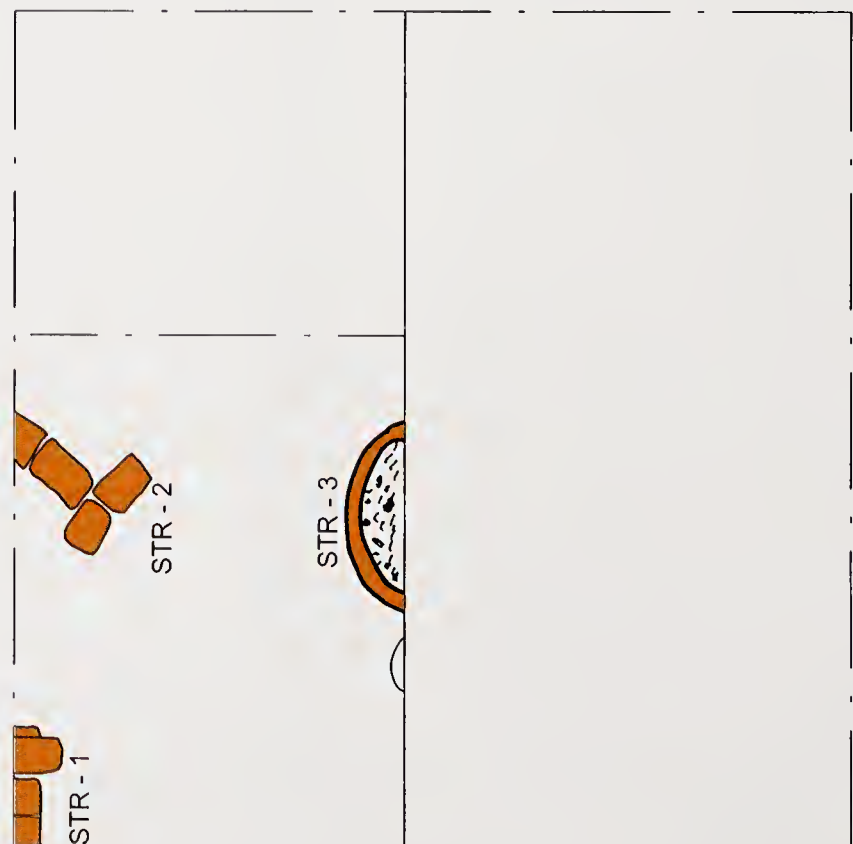


CHAK 86, 2003-04  
DISTRICT GANGANAGAR, RAJASTHAN  
TRENCH A1, Qd 1 AND 4  
STRUCTURES

Scale :- 0 1 2 m

PHASE I  
PHASE II

A2 ●



A1 ●

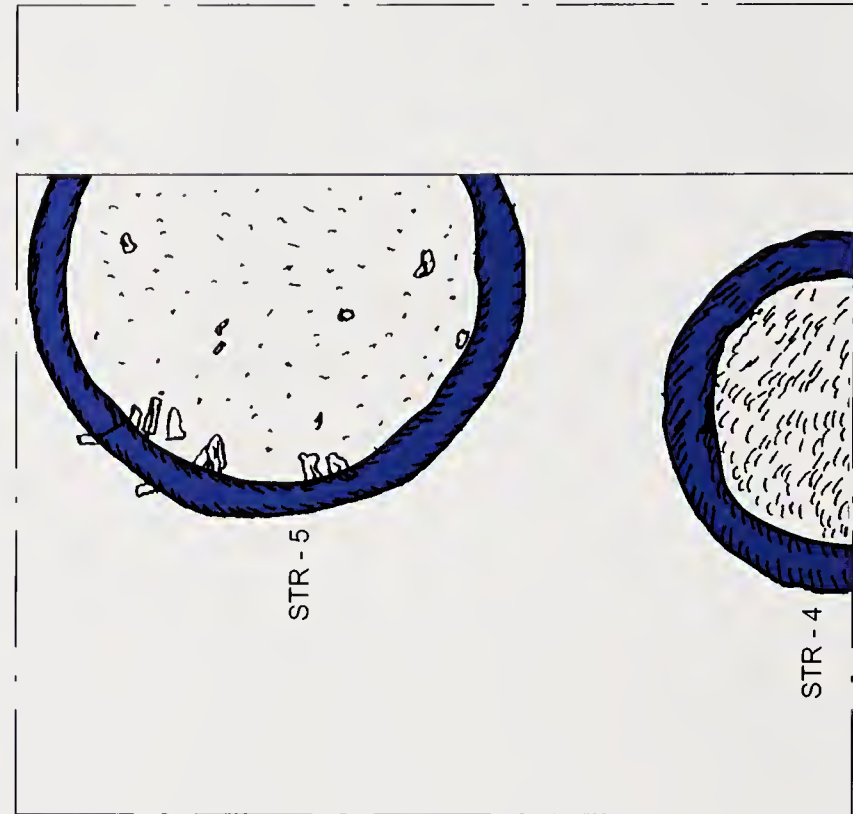


Fig. 31

CHAK 86,2003-04  
DISTRICT GANGANAGAR, RAJASTHAN  
TRENCH ZA1,Qd 1 AND 4  
STRUCTURES

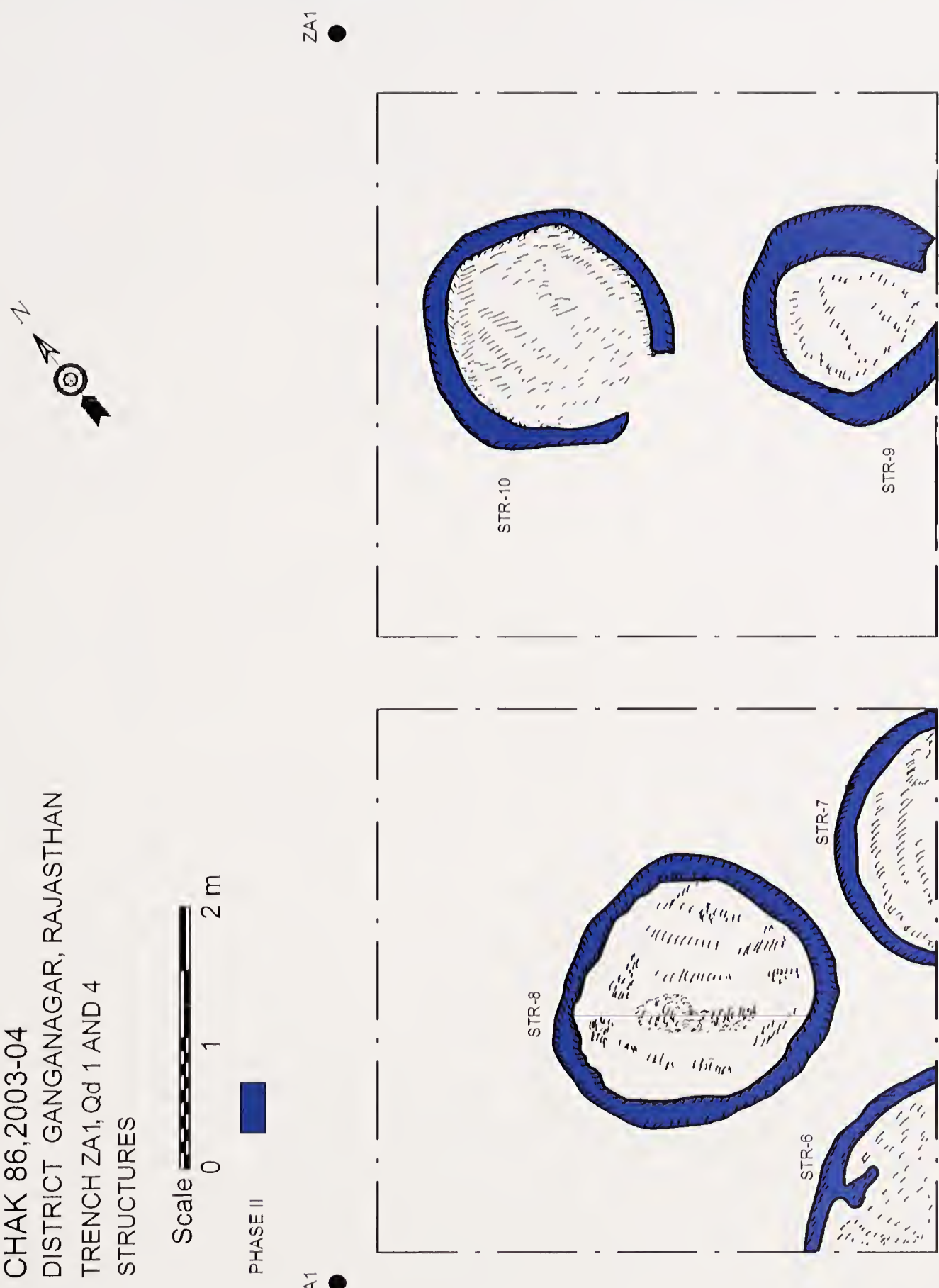


Fig. 32



Table-V  
**Concordance of Layers of Painted Grey Ware Level**  
 Maximum Deposit 2.50m  
 Square/Quadrant

A2				A1				ZA1			
Qd1	Qd2	Qd3	Qd4	Qd1	Qd2	Qd3	Qd4	Qd1	Qd2	Qd3	Qd4
1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2
3				3			3	3	3	3	3
				4			4		4		
							5		5		
										NATURAL	

- |  |   |  |  |   |  |
|--|---|--|--|---|--|
| 3. Stratigraphic position                  | : | Built on the top of layer (4) and sealed by layer (3)  | 7. Composition of mortar                   | : | Mud-mortar   |
| 4. Period and structural phase             | : | Painted Grey Ware (phase I)  | 8. Orientation of longer axis              | : | North-south  |
| 5. Measurement of structure                | : | (a) length 0.55m<br>(b) width 0.25m<br>(c) height 0.10m  | 9. Nature of bricks used                   | : | Mud-bricks   |
| 6. Number of courses                       | : | One course   | 11. Dimension of bricks used               | : | 27x20x10 cm  |
| 7. Masonry and bond                        | : | Mud-mortar   | 12. State of preservation                  | : | Damaged and partly exposed   |
| 8. Composition of mortar                   | : | Mud-mortar   | 13. Shape and other distinguishing feature | : | Roughly 'L' shaped structure is embedded in the section, hence its nature could not be completely worked out. Its other end has been robbed off. |
| 9. Orientation of longer axis              | : | Northeast-southwest  |  |   |  |
| 10. Nature of bricks used                  | : | Mud-bricks   |  |   |  |
| 11. Dimension of bricks used               | : | 28x20x10 cm  |  |   |  |
| 12. State of preservation                  | : | Damaged and partly exposed   |  |   |  |
| 13. Shape and other distinguishing feature | : | The structure takes a turn at right angle. It was embedded in the section; hence, its further nature could not be ascertained. |  |   |  |

**Structure 2**

- |                                |   |  |
|--------------------------------|---|--|
| 1. Location                    | : | Square A1, Quadrant 4                                      |
| 2. Type of structure           | : | Mud-brick structure  |
| 3. Stratigraphic position      | : | Built on the top of layer (4) and sealed by layer (3)      |
| 4. Period and structural phase | : | Painted Grey Ware (phase I)                                |
| 5. Measurement of structure    | : | (a) length 0.65 m<br>(b) width 0.20 m<br>(c) height 0.10 m |
| 6. Number of courses           | : | One course   |

**Structure 3**

- |   |   |   |
|---|---|---|
| 1. Location                               | : | Square A1, Quadrant 4   |
| 2. Type of structure                      | : | Hearth  |
| 3. Stratigraphic position                 | : | Built on the top of layer (4) and sealed by layer (3)                 |
| 4. Period and structural phase            | : | Painted Grey Ware (phase I)   |
| 5. Measurement of structure               | : | (a) length 0.95m<br>(b) width 0.25m<br>(c) height 0.30m               |
| 6. Composition of mortar                  | : | Mud-mortar  |
| 7. Orientation of longer axis             | : | Northeast-southwest   |
| 8. State of preservation                  | : | Incomplete and partly exposed.  |
| 9. Shape and other distinguishing feature | : | Presumably oval shaped on plan, the hearth has retained its top edge. |





Pl. LXVIII. Chak 86 : Structures 1 and 2, Phase I. See pp. 151, 156, 161





Pl. LXIX. Chak 86 : Structure 3, Phase I. See pp. 151, 161



**Structure 4**

1. Location : Square A1, Quadrant 1
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : 1.80 m (diameter)
6. Thickness of perimeter : 20 cm
7. State of preservation : Traceable on plan and partly exposed.
8. Shape and other distinguishing feature : The circular hut is marked by burnt earth, charcoal and ash. The pieces of potsherds and charred bones were also recorded.

**Structure 5**

1. Location : Square A1, Quadrant 1
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : 2.50m (diameter)
6. Thickness of perimeter : 20cm
7. State of preservation : Traceable on plan

8. Shape and other distinguishing feature : The circular floor of hut contains ash, plenty of charred bones and burnt-clay lumps. The potsherds comprise Painted Grey Ware, black-and-red ware, black-slipped ware, grey ware, red ware etc.

**Structure 6**

1. Location : Square ZA1, Quadrant 4
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : Approximately 2.0 m (diameter)
6. Thickness of perimeter : 17 cm
7. State of preservation : Traceable on plan and partly exposed.
8. Shape and other distinguishing feature : The rammed floor of the partly excavated circular hut revealed the burnt clay lumps, charred bones and very small fragments of potsherds.





Pl. LXX. Chak 86 : Structures 4 and 5, Phase II. See pp. 151, 164



**Structure 7**

1. Location : Square ZA1, Quadrant 4
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : 2.0 m (diameter)
6. Thickness of perimeter : 18 cm
7. State of preservation : Traceable on plan and partly exposed
8. Shape and other distinguishing feature : Probably the hut was circular on plan. Charcoal and ash contents were found from it.

**Structure 8**

1. Location : Square ZA1, Quadrant 4
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : 2.20 m (diameter)
6. Thickness of perimeter : 20 cm
7. State of preservation : Traceable on plan
8. Shape and other distinguishing feature : The circular hut is marked by rammed burnt earth and ash. The floor appears

to have been plastered with clay and cow dung. Some pieces of charred bones were also found.

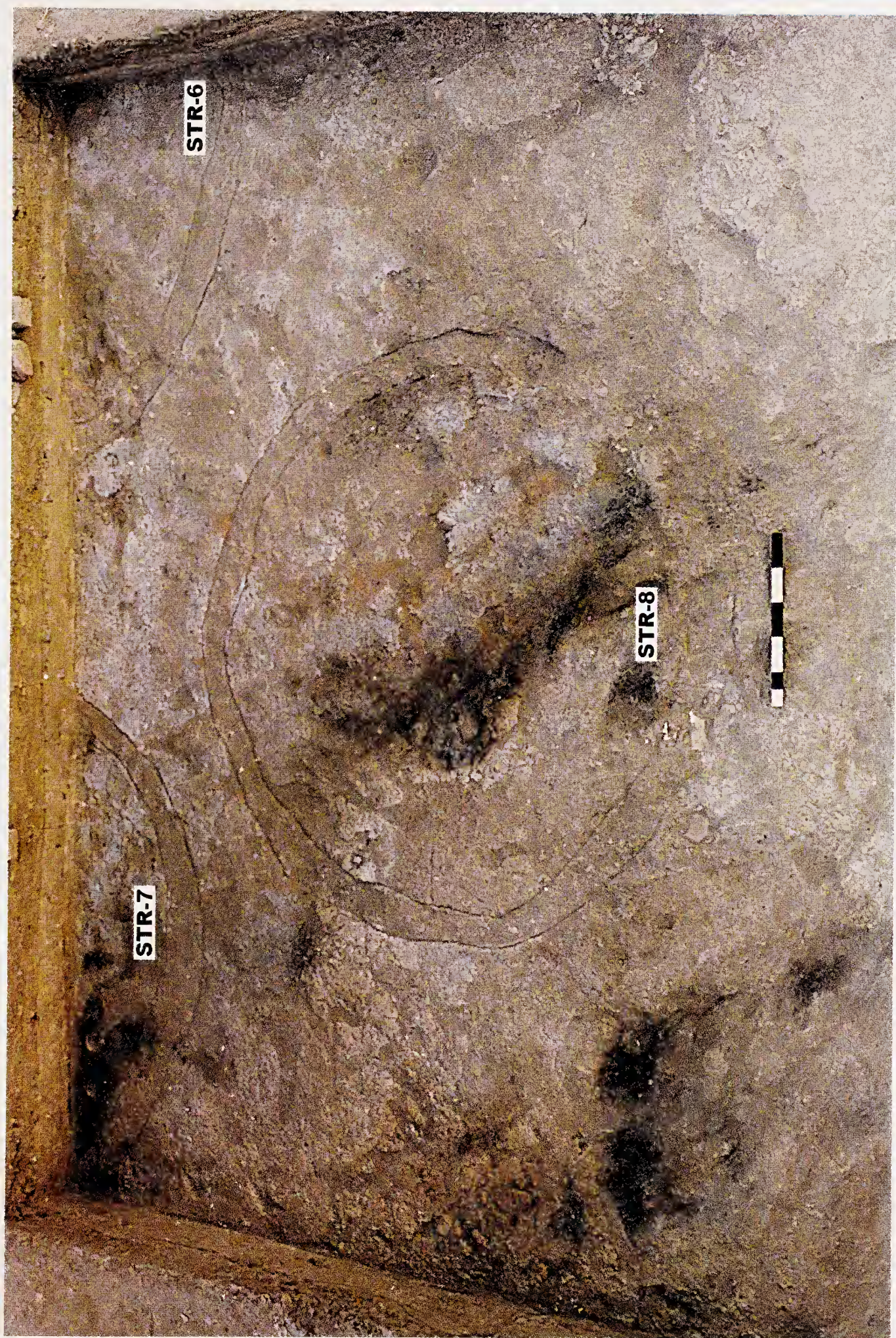
**Structure 9**

1. Location : Square ZA1, Quadrant 1
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)
4. Period and structural phase : Painted Grey Ware (phase II)
5. Measurement of structure : 1.65 m (diameter)
6. Thickness of perimeter : 38 cm
7. State of preservation : Traceable on plan
8. Shape and other distinguishing feature : The periphery of the circular hut is marked by burnt clay and decomposed ashy material. Small pieces of Painted Grey Ware, black-and-red ware, black-slipped ware, grey ware, ash and charcoal etc were found.

**Structure 10**

1. Location : Square ZA1, Quadrant 1
2. Type of structure : Hut
3. Stratigraphic position: Built on the top of layer (3) and sealed by layer (2)





Pl. LXXI. Chak 86 : Structures 6, 7 and 8, Phase II. See pp. 164, 166





*Pl. LXXII. Chak 86 : Structure 9, Phase II. See p. 166*



- |   |   |  |
|---|---|--|
| 4. Period and structural phase            | : | Painted Grey Ware (phase II)   |
| 5. Measurement of structure               | : | 1.95 m (diameter.)   |
| 6. Thickness of perimeter                 | : | 17cm   |
| 7. State of preservation                  | : | Traceable on plan.   |
| 8. Shape and other distinguishing feature | : | The periphery of the circular hut is represented by burnt clay and decomposed ashy material. The potsherds of Painted Grey Ware, black-and-red-ware, black-slipped ware, grey ware, ash, charred bones and charcoal etc were also found. |

### 3. OTHER FINDS

#### A. Stone Objects

##### i. Pounder-cum-pestle

The excavation yielded two pounder-cum-pestle, both are having multiple sides. They belong to phase II of Painted Grey Ware period.

##### Fig. 33; pl. LXXIV

1. Pounder-cum-pestle, sandstone, roughly round with pitted surface, one side is smooth and flat due to use.  
From layer no.1 (Reg. no. 33)
2. Pounder-cum-pestle, sandstone, with multiple sides due to use.  
From the surface (Reg. no.63)

#### B. Terracotta Objects

##### i. Animal figurines

Three animal figurines are reported from the site and they belong to phase II.

##### Fig. 34; pl. LXXV

1. Broken, red in colour, well-fired figurine. The head, hump and legs are missing.  
From the surface (Reg. no. 79)
2. Handmade, red coloured but ill-fired figurine. Its head, hump, protrusions on the back and the three legs are badly damaged.  
From the surface (Reg. no. 29)
3. Handmade, red, well-fired figurine, head is mutilated and two curved projections towards left and right have been damaged.  
From the surface (Reg. no. 11)

##### ii. Sling balls

In all twelve balls were recovered during the excavation, of these eleven are of terracotta and one is of faience. Their size varies from small to large. One of the terracotta balls has graffiti mark on it and another has intersecting lines. The faience ball is divided into four parts and is decorated. Except one (Reg. no. 104) all belong to phase II.

##### Pl. LXXVI

1. Small, spheroid, grey in colour, damaged.  
From layer no. 1 (Reg. no. 62)
2. Small, spheroid, grey in colour.  
From layer no. 1 (Reg. no. 55)
3. Small ovaloid, dull red in colour.  
From layer no. 2 (Reg. no. 93)
4. Small, spheroid, dull red in colour.  
From layer. no. 1 (Reg. no. 70)





Pl. LXXIII. Chak 86 : Structure 10, Phase II. See pp. 166, 169



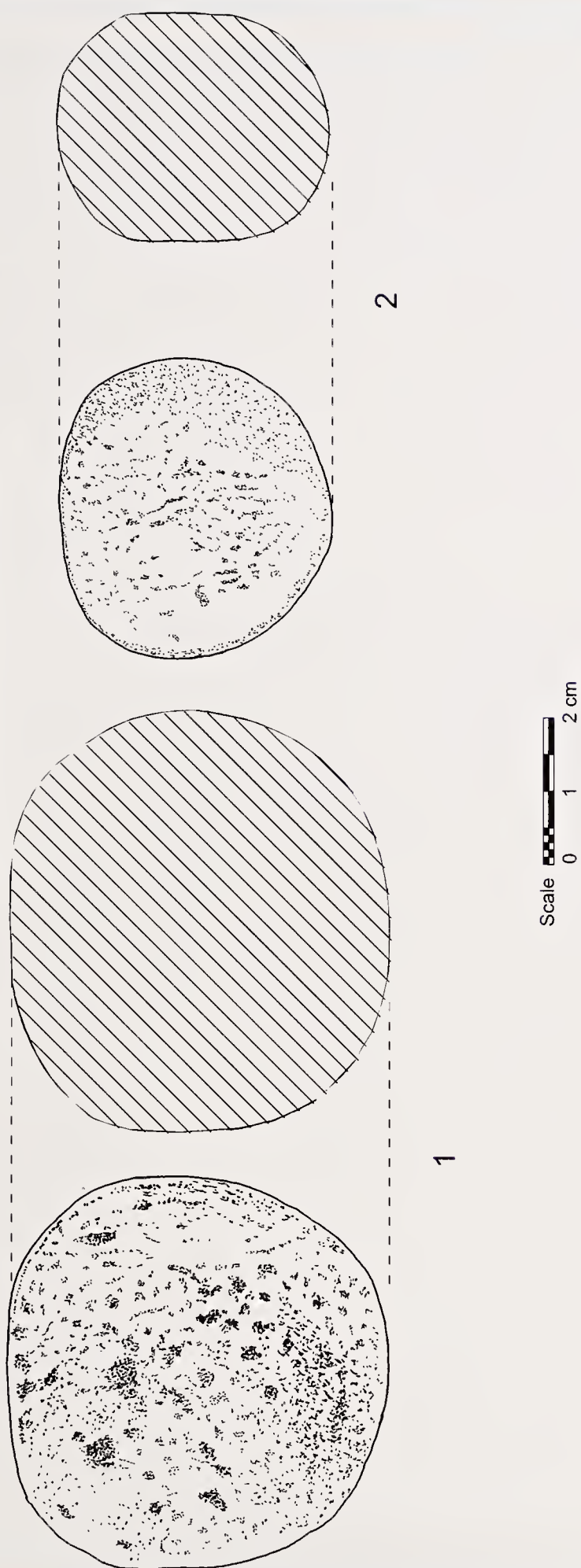


Fig. 33. Pounder-cum-pestle





Pl. LXXIV. Chak 86 : Pounder-cum-pestle. See p. 169



Scale 0 1 2 cm

Fig. 34. Animal figurines





Pl. LXXV. Chak 86 : Animal figurines. See p. 169

5. Small, spheroid, dull red in colour, divided into four parts by two intersecting incised lines around the circumference.  
From layer no. 2 ( Reg. no. 78)
6. Medium sized spheroid, red in colour.  
From layer no. 2 ( Reg. no. 96)
7. Medium sized spheroid, well-fired and red in colour, partly broken.  
From the surface (Reg. no. 103)
8. Medium sized, roughly circular, dull red in colour, bearing graffiti marks, partly damaged.  
From layer no. 4 (Reg. no. 104)
9. Small, spheroid of faience divided into four parts by two intersecting incised lines. It bears parallel and oblique incisions.  
From layer no. 1 (Reg. no. 67)
10. Large, spheroid, red in colour.  
From the surface (Reg. no. 3)
11. Large, roughly circular, dull red in colour, ill-fired.  
From layer no. 1 (Reg. no. 41)
12. Large spheroid, red in colour.  
From the surface (Reg. no. 25)

### **iii. Hopscotch**

Six hopscotches made from potsherds were obtained. All are from phase II. The maximum and minimum measurements of them are as below:-

Max. diameter 5 cm; Min. diameter 2.7 cm

Max. thickness 1.5 cm; Min. thickness 0.3 cm

They are described below: -

#### **Pl. LXXVII**

1. Small, prepared from well-fired red-ware. Rubbed and smoothened to impart circular shape. The striation marks are visible on the surface.  
From layer no. 2 (Reg. no. 89)

2. Small, prepared from dull red ware, the edges are chipped hence it is not completely circular.  
From layer no. 2 (Reg. no. 81)
3. Small, prepared from dull red ware, the edges are uneven.  
From layer no. 2 (Reg. no. 76)
4. Prepared from red ware, ill-fired, gritty surface, the edge is rubbed to impart circular shape.  
From the surface (Reg. no. 7)
5. Small, prepared from ill-fired thin red ware. The edge is rubbed to give it a circular shape.  
From layer no. 1 (Reg. no. 51)
6. Prepared from dull red ware, the edge is chipped, rubbed and smoothened to a circular shape. The surface is gritty.  
From layer no. 1 (Reg. no. 34)

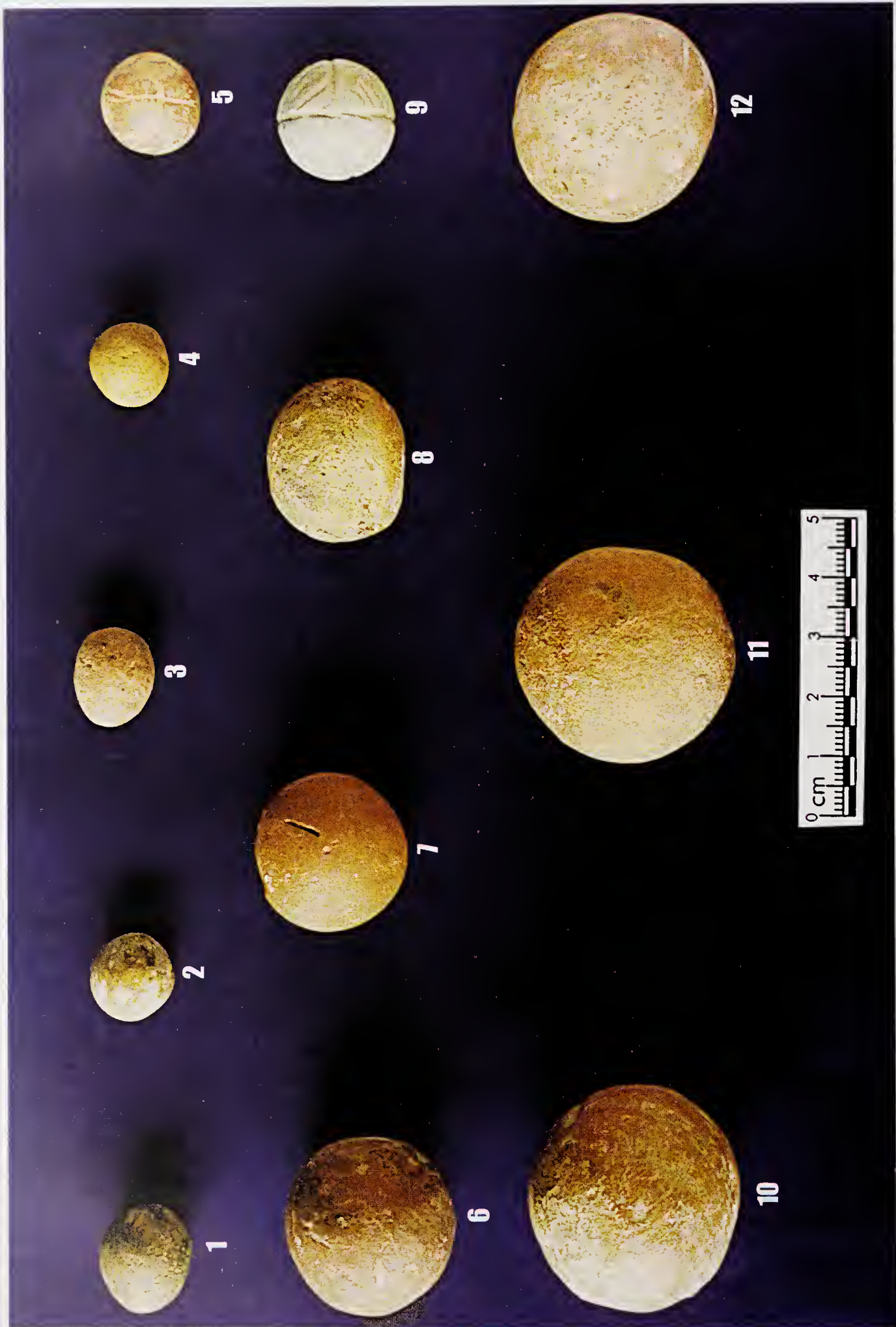
### **iv. Wheels**

In all four wheels belonging to phase II were unearthed, of these one is incomplete and the other three are damaged.

#### **Pl. LXXVIII**

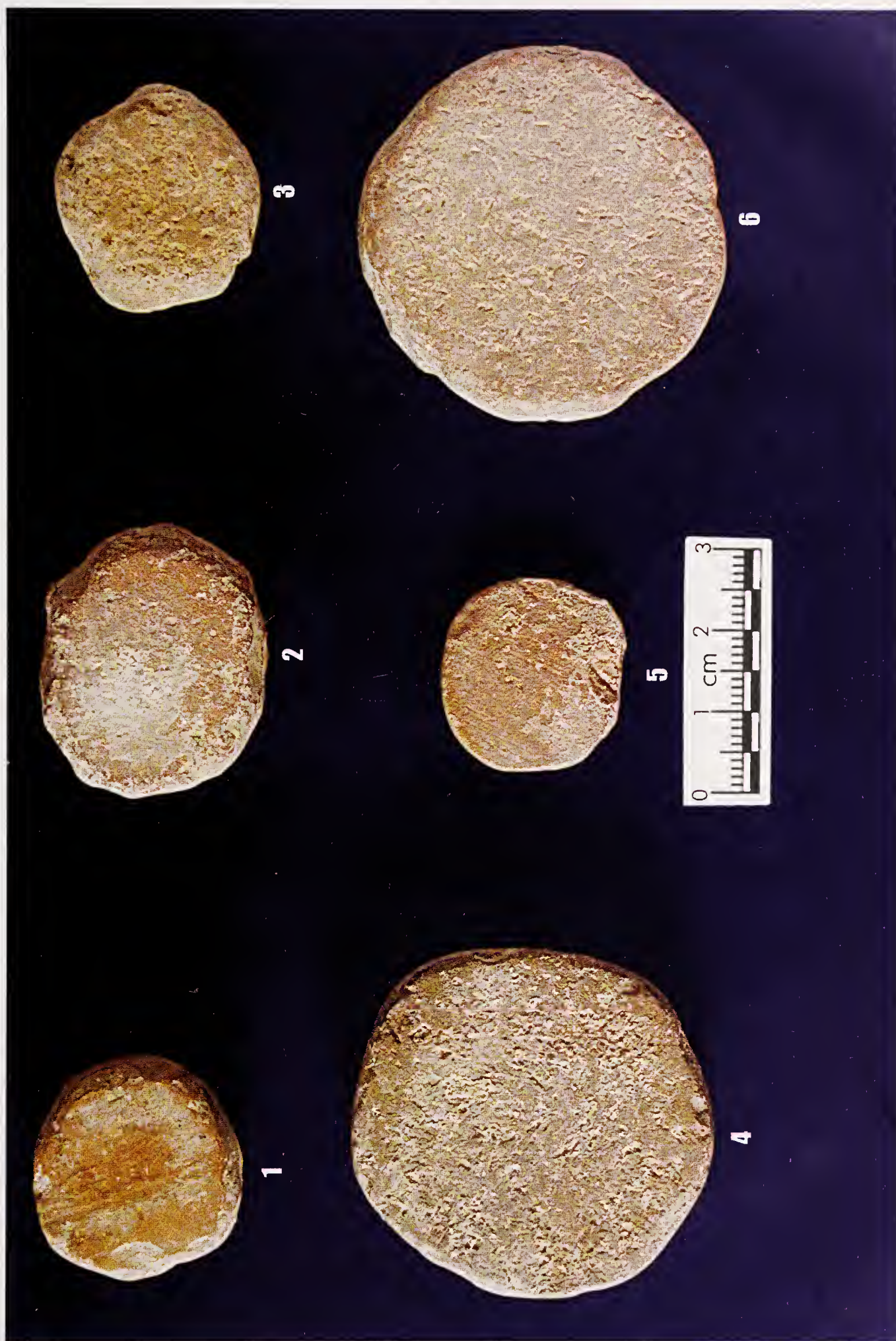
1. Damaged wheel, having prominent hub with a hole.  
From layer no. 2 (Reg. no. 83)
2. Broken part of a wheel. It has retained a prominent hub bearing a hole and is badly weathered.  
From layer no. 1 (Reg. no. 39)
3. Prepared from thin potsherd. Due to improper chipping, the wheel is not completely circular but the edge is made smooth by rubbing. An incised circle around the central perforation denotes the hub.  
From layer no. 1 (Reg. no. 64)





Pl. LXXVI. Chak 86 : Sling balls. See pp. 169, 175





Pl. LXXVII. Chak 86 : Hopscotch. See p. 175



4. Prepared from a part of an ill-fired potsherd. It bears small blind holes on both the surfaces. Its surface and edge have not been finished. From the surface (Reg. no. 9)

#### v. Toycart frames

The site yielded two toycart frames belonging to phase II.

#### Fig. 35; pl. LXXIX

1. Brick red thick solid chassis of the box type card provided with one cross bar hole for fixing the axle. It bears four see-through perforations on the corners. The lower surface of the narrower ends has deep triangular cuttings probably for fixing the frame.  
From the surface (Reg. no. 45)
2. Broken part of a chassis bearing two lateral holes for crossbar and four see-through perforations meant for holding the sidebars.  
From layer no. 1 (Reg. no. 24)

#### C. Bone Objects

Six bone objects recovered from the excavation are made out of ribs of mammals viz. ox, buffalo etc. Their paucity may be due to their friable nature. The implements include sharp edge or pointed arrowheads, awl, stylus, borer, socket etc.

#### Fig. 36; pl. LXXX

1. Fragment of a buff-coloured awl with a broken sharp point; broken butt and polished surface is circular in section.  
From layer no. 1 (Reg.no.42)

2. Fragment of a grey-coloured borer with a sharp point obtained by chipping and grinding. The polished surface is circular in section. Its butt end is broken.  
From layer no. 1 (Reg.no.40)
3. Buff-coloured point with a single pointed tip and the polished surface is oval in section. It has a circular socket at the butt end, possibly for hafting.  
From the humus (Reg. no. 22)
4. Fragment of a buff-coloured arrowhead with broken working end, circular in section and the butt end is having a chiselled tang for hafting.  
From layer no. 2 (Reg.no.88)
5. White-coloured stylus is circular in section. The tip is polished and the butt end is broken.  
From layer no.3 (Reg.no.100)
6. Buff-coloured bud shaped socket (probably a cap to secure the working point of the stylus).  
From layer no.2 (Reg.no.91)

#### D. Bangles

A total of thirteen bangle fragments made of glass, shell, terracotta and faience were recovered. They are described as under:

#### Pl. LXXXI

1. Fragment of a glass bangle, translucent blue greenish, pentagonal in section.  
From the surface (Reg. no. 12)
2. Fragment of a terracotta bangle, black in colour, it is quadrangular in section with convex upper part, decorated with incised parallel and wavy lines.  
From layer no. 2 (Reg. no. 77)
3. Fragment of a terracotta bangle, grey in colour and circular in section.  
From layer no. 2 (Reg. no. 85)



Pl. LXXVIII. Chak 86 : Wheels. See pp. 175, 178



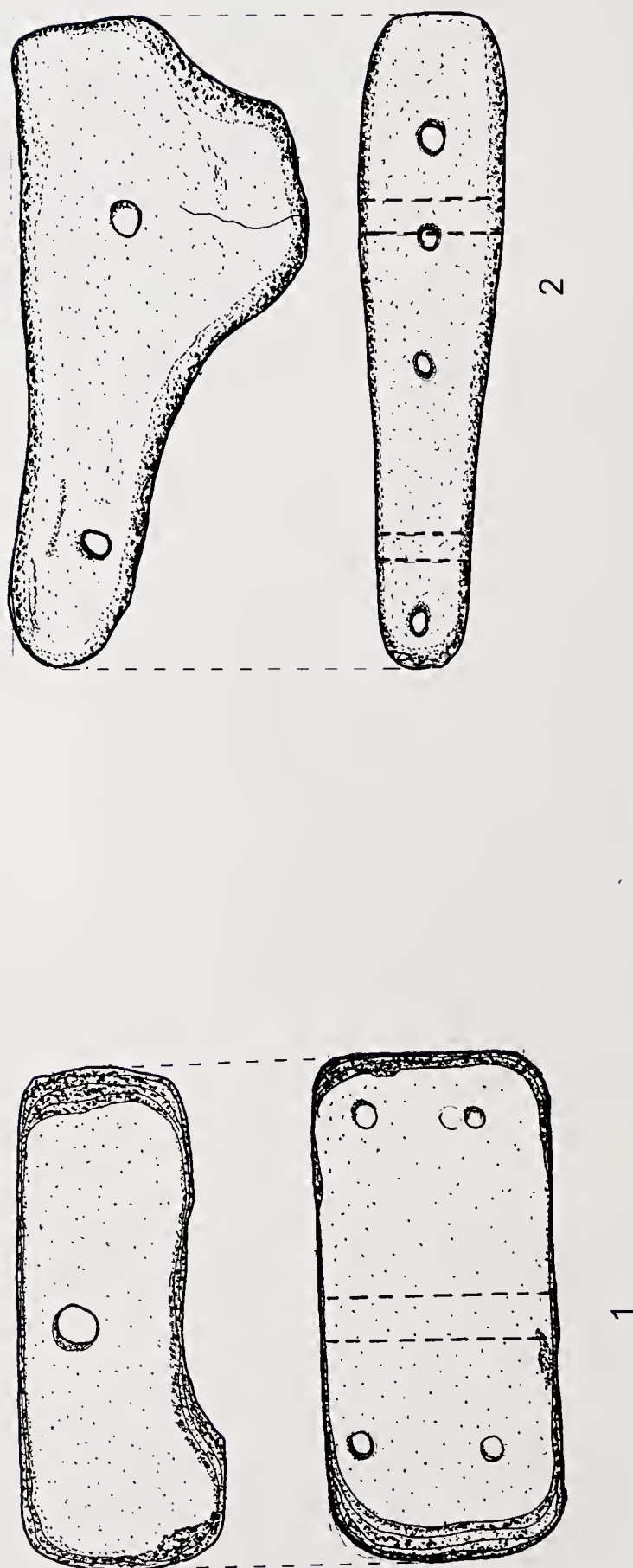


Fig. 35. Toy cart frames



Pl. LXXIX. Chak 86 : Toy cart frames. See p. 178



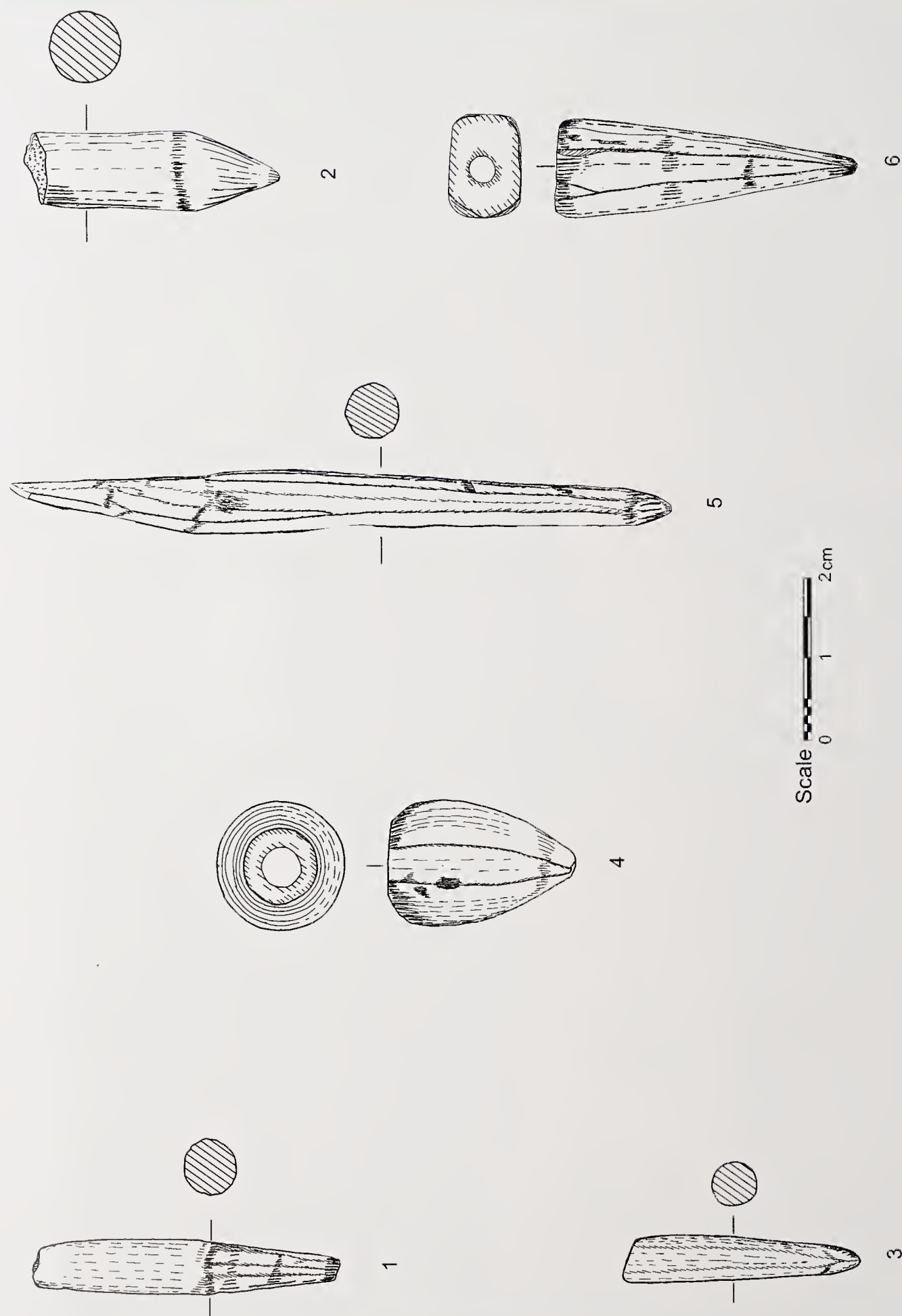


Fig. 36. Bone objects



Pl. LXXX. Chak 86 : Bone objects. See p. 178



4. Fragment of a terracotta bangle, grey in colour, it is roughly circular in section.  
From layer no. 2 (Reg. no. 90)
5. Fragment of a faience bangle, plano-convex in section.  
From the surface (Reg. no. 68)
6. Fragment of a faience bangle, plano-convex in section. Decorated with neatly worked pattern of four deep oblique grooves alternating with corresponding ridges, converging at the centre, so as to form a raised triangular design.  
From layer no. 2 (Reg. no. 84)
7. Fragment of a faience bangle, convexo-concave in section. Decorated with three deep channels.  
From layer no. 2 (Reg. no. 82)
8. Fragment of a faience bangle, quadrangular in section, with flat top and convex interior, it is decorated with oblique incised lines between parallel grooved borders.  
From layer no. 1 (Reg. no. 28)
9. Fragment of a faience bangle, quadrangular in section with flat top and convex base. Decorated with incised rhomboid designs between parallel lines.  
From the surface (Reg. no. 6)
10. Fragment of a faience bangle, quadrangular in section with flat top and convex interior. It is incised with oblique lines and bears an incised single border.  
From layer no. 1 (Reg. no. 43)
11. Fragment of a faience bangle, biconvex in section. Decorated with incised oblique and parallel lines.  
From the surface (Reg. no. 8)
12. Fragment of a shell bangle, pentagonal in section.  
From layer no. 2 (Reg. no. 75)

13. Fragment of a shell bangle, rectangular in section and decorated with five shallow channels to simulate six ridges of varying thickness.  
From layer no. 1 (Reg. no. 54)

### **E. Miscellaneous Objects**

The miscellaneous objects made of terracotta, faience, shell and chert are described below.

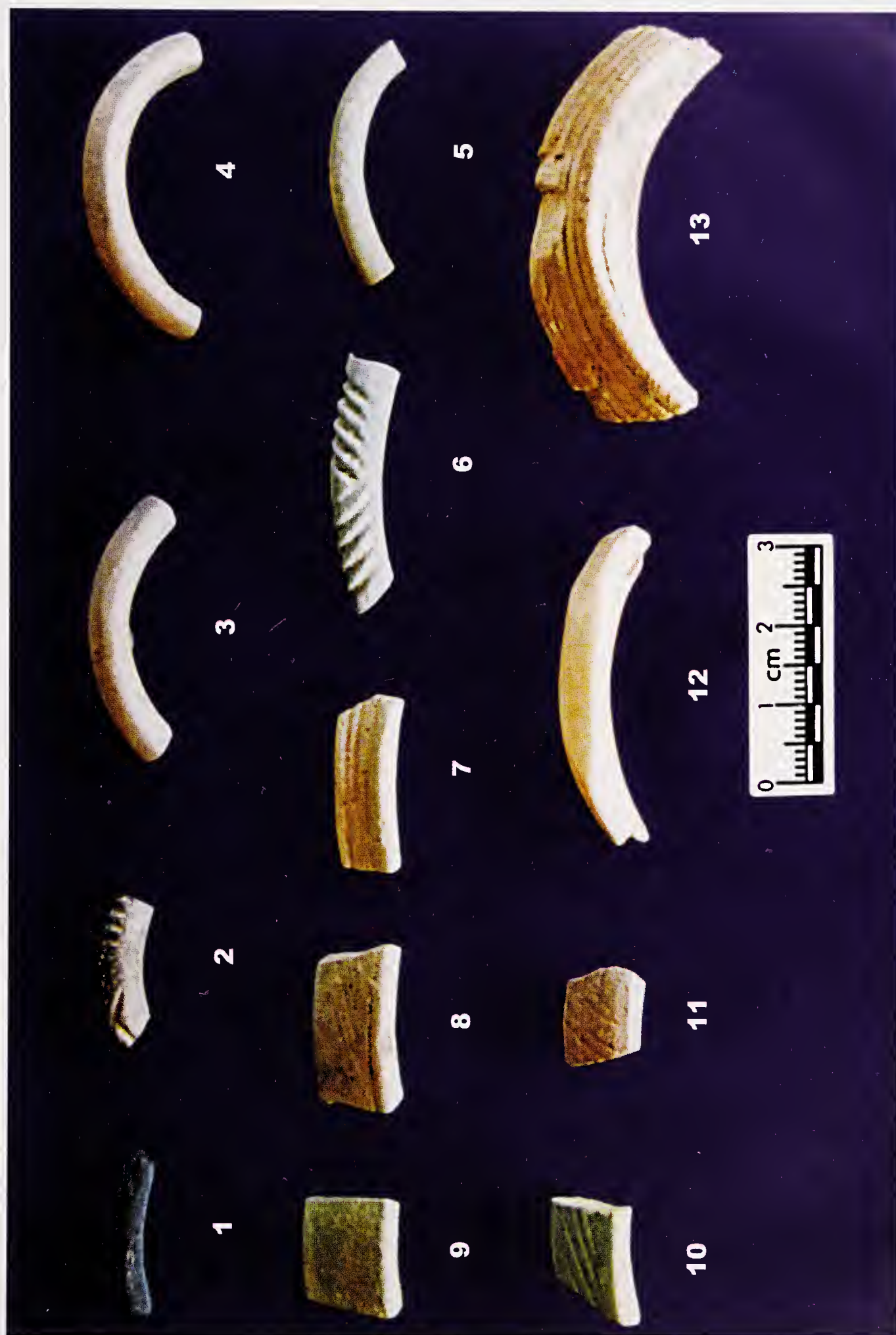
### **Pl. LXXXII**

1. Small, triangular, well-baked terracotta cake.  
From layer no. 1 (Reg. no. 13)
2. Discoid, convexo-concave inlay piece made of shell.  
From layer no. 1 (Reg. no. 14)
3. Fragment of a parallel-sided blade of chert, light brown in colour, having trapezoid transverse section. Both the margins are retouched; one of them has steep blunting. It is broken at both the ends.  
From the surface (Reg. no. 13)

### **4. BEADS**

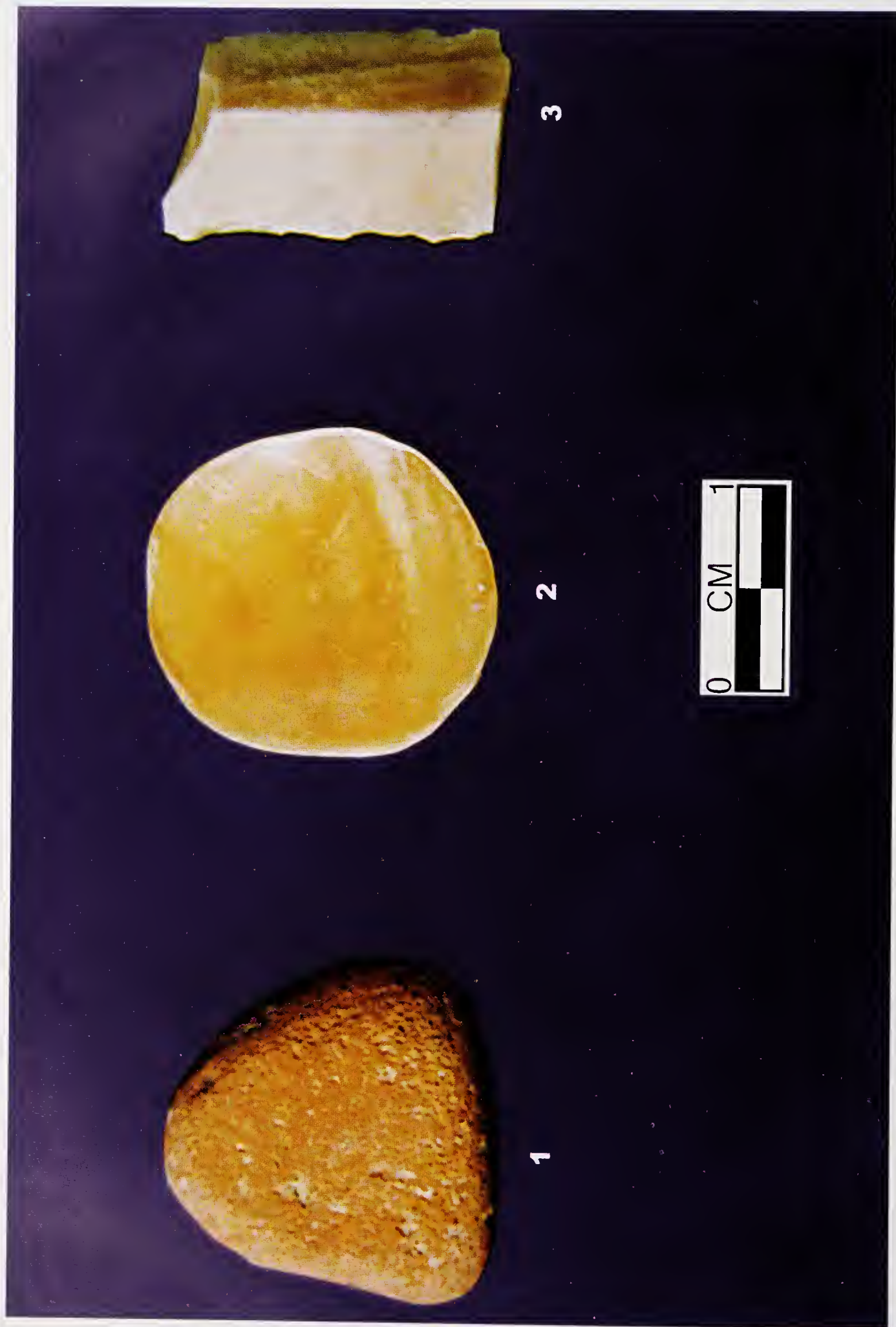
The excavations yielded fifty-one beads of which terracotta accounts for twenty-nine. Of the remaining twenty-two, eleven are of carnelian, five of shell, three of lapis lazuli and one each of chert, agate and quartz (see table VI and fig.37). The beads are distributed as follows: layer (1), thirty; layer (2), six; layer (3), three; layer (4), one and rest eleven were found from the surface (Fig. 38). The represented shapes<sup>1</sup> of the beads are barrel, cylinder, tubular, flat

<sup>1</sup> H.C.Beck, 'Classification and Nomenclature of Beads and Pendants,' *Archaeologia*, No. LXXVII,(1928),pp. 1 ff.



Pl. LXXXI. Chak 86 : Bangles. See pp. 178, 184





Pl. LXXXII. Chak 86 : Miscellaneous objects. See p. 184

# MATERIAL-WISE CLASSIFICATION OF BEADS

## CHAK 86

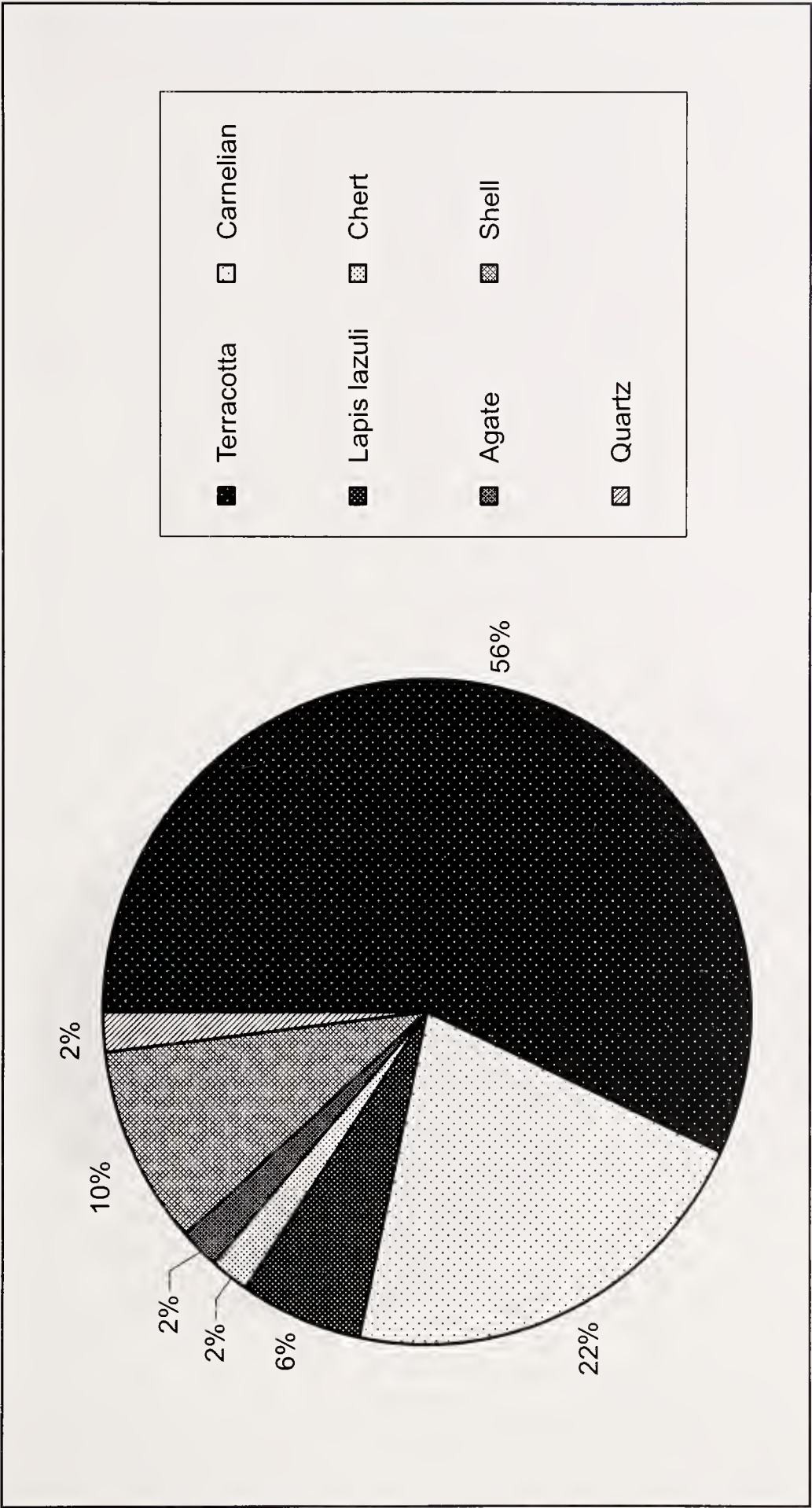


Fig. 37



## LAYER-WISE DISTRIBUTION OF BEADS CHAK 86

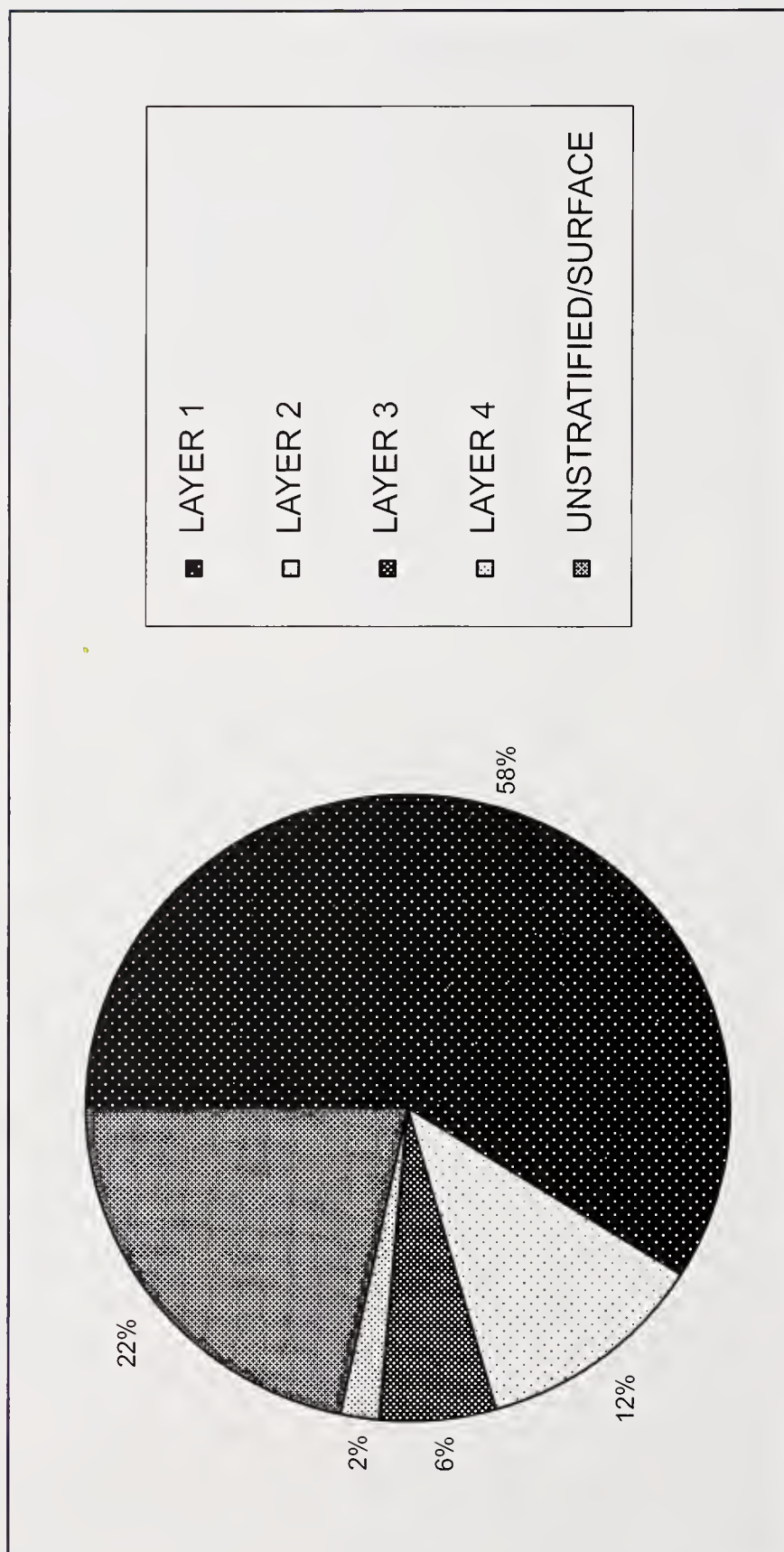


Fig. 38

triangular, toggle shaped, biconvex, bicone, spherical, pear shaped and vase shaped (see table VII and fig. 39). The following beads are illustrated:-

### A. Stone

#### Carnelian

This site yielded eleven carnelian beads. Those are described below:

#### Fig. 40; pl. LXXXIII

1. Toggle shaped  
From layer no. 1 (Reg. no. 74)
2. Long truncated barrel circular  
From layer no. 1 (Reg.no. 27)
3. Long truncated barrel circular  
From layer no. 1 (Reg. no. 32)
4. Etched carnelian: Flat triangular  
From layer no. 1 (Reg. no. 56)
5. Short truncated cylinder circular  
From layer no. 1 (Reg.no. 48)
6. Standard truncated bicone square faceted  
From layer no. 1 (Reg.no. 66)
7. Short truncated biconvex circular  
From layer no. 1 (Reg.no. 17)
8. Standard truncated bicone circular  
From layer no. 4 (Reg.no. 102)
9. Spherical  
From layer no. 1 (Reg.no. 58)
10. Truncated spherical (unfinished)  
From layer no. 1 (Reg. no. 20)
11. Truncated spherical  
From layer no. 2 (Reg.no. 73)

### B. Terracotta

This site has yielded twenty-nine terracotta beads. These are described below:

#### Pl. LXXXIV

1. Standard bicone circular  
From layer no. 1 (Reg. no. 44)
2. Short cylinder circular (disc)  
From layer no.2 (Reg.no. 99)
3. Long chamfered barrel circular  
From layer no. 2 (Reg. no. 80)
4. Standard bicone circular  
From the surface (Reg. no. 10)
5. Standard truncated bicone circular  
From the surface (Reg.no. 01)
6. Standard truncated bicone circular  
From layer no. 1 (Reg.no. 49)
7. Short truncated bicone circular  
From layer no. 2 (Reg.no. 92)
8. Short truncated bicone circular  
From layer no. 1 (Reg.no. 30)
9. Standard bicone circular  
From layer no. 1 (Reg.no. 46)
10. Short bicone circular  
From layer no. 1 (Reg. no.53)
11. Short truncated bicone circular  
From the surface (Reg.no.04)
12. Short truncated bicone circular  
From the surface (Reg.no.23)
13. Standard truncated bicone circular  
From layer no. 1 (Reg.no. 72)
14. Standard truncated bicone circular  
From layer no. 1 (Reg. no.71)
15. Standard bicone circular  
From layer no.2 (Reg.no.87)

#### Pl. LXXXV

1. Short bicone circular  
From layer no. 1 (Reg. no.52)
2. Standard truncated bicone circular with incised strokes.  
From the surface (Reg. no.36)



# SHAPE-WISE DISTRIBUTION OF BEADS CHAK 86

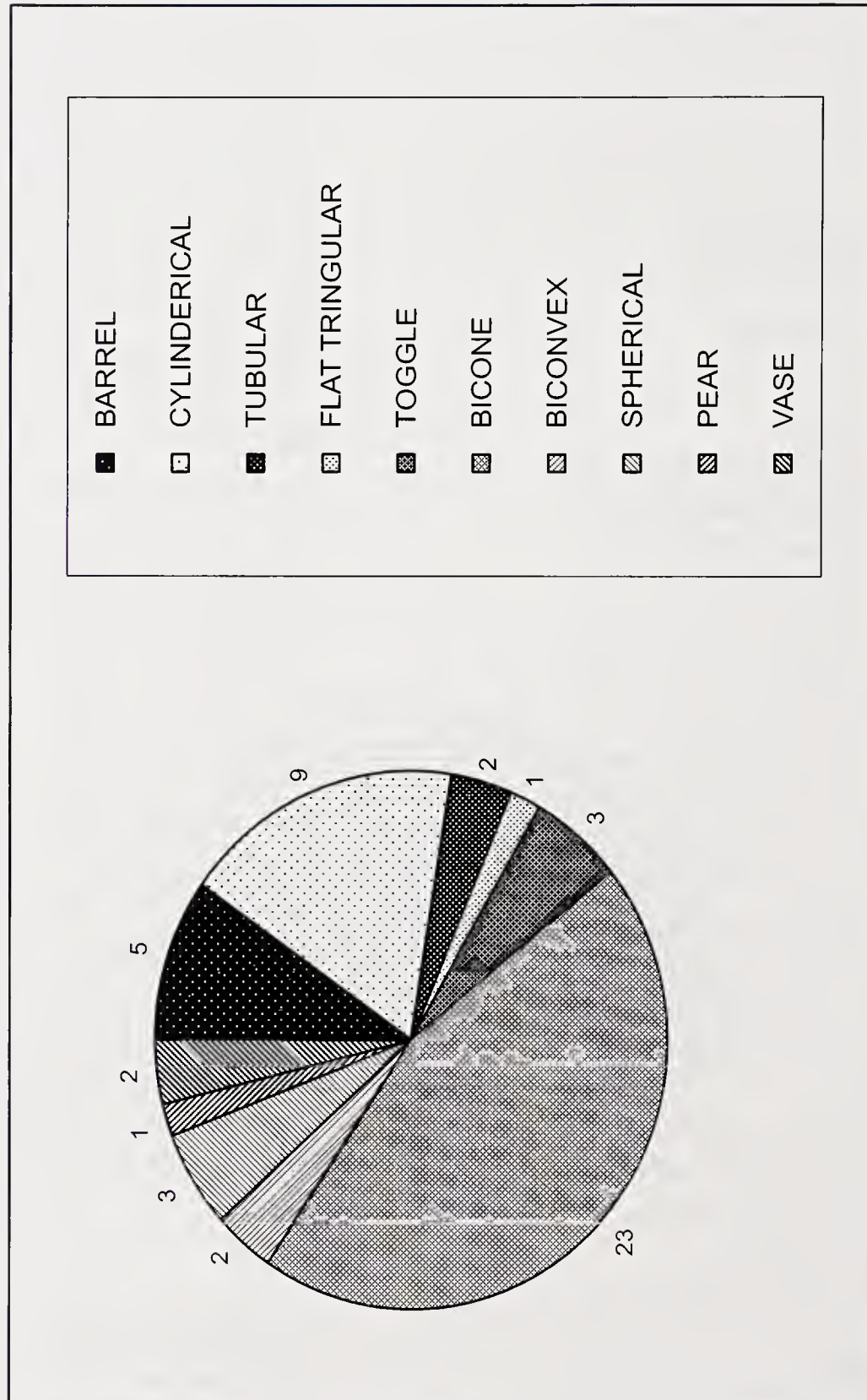


Fig. 39

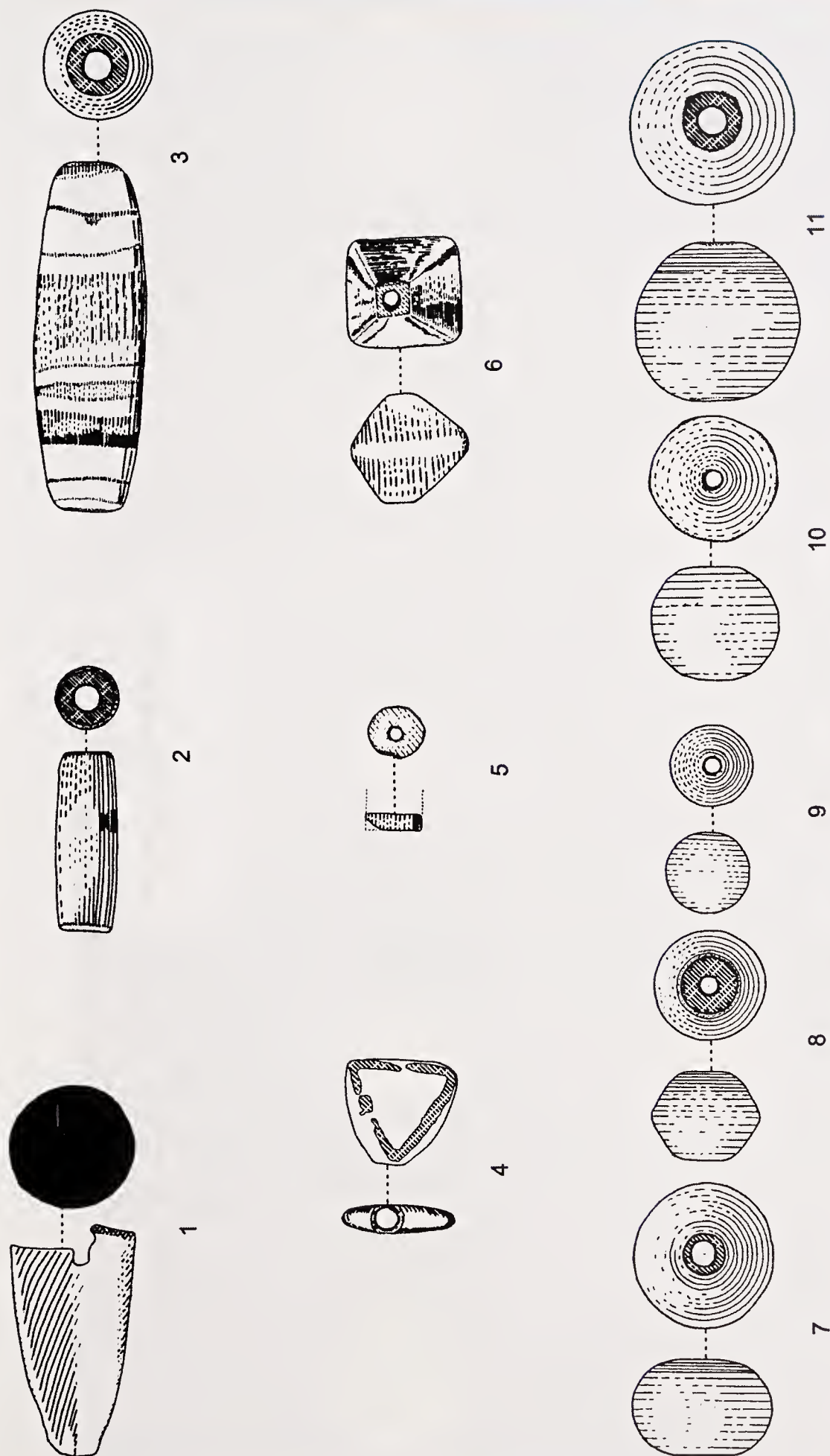
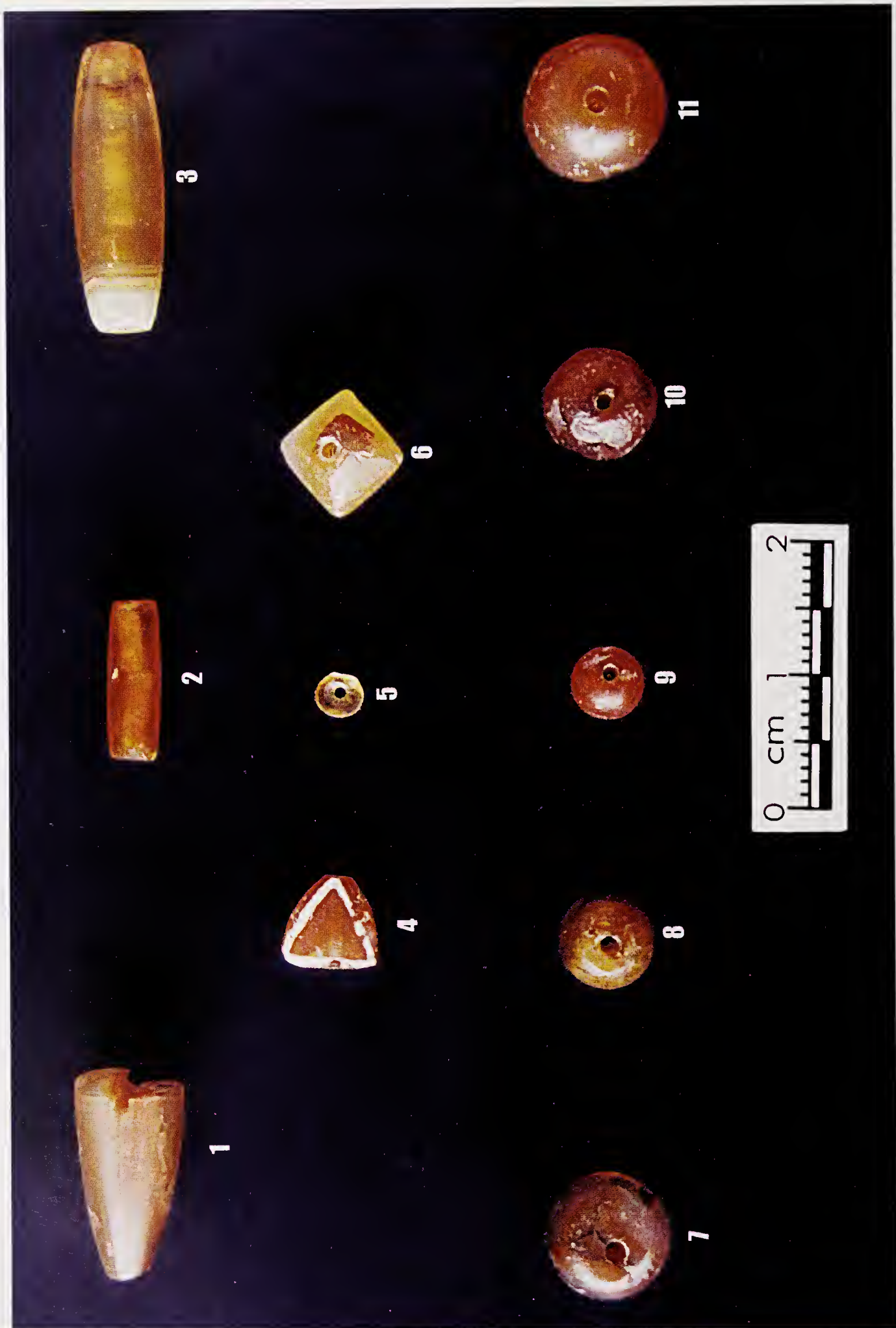
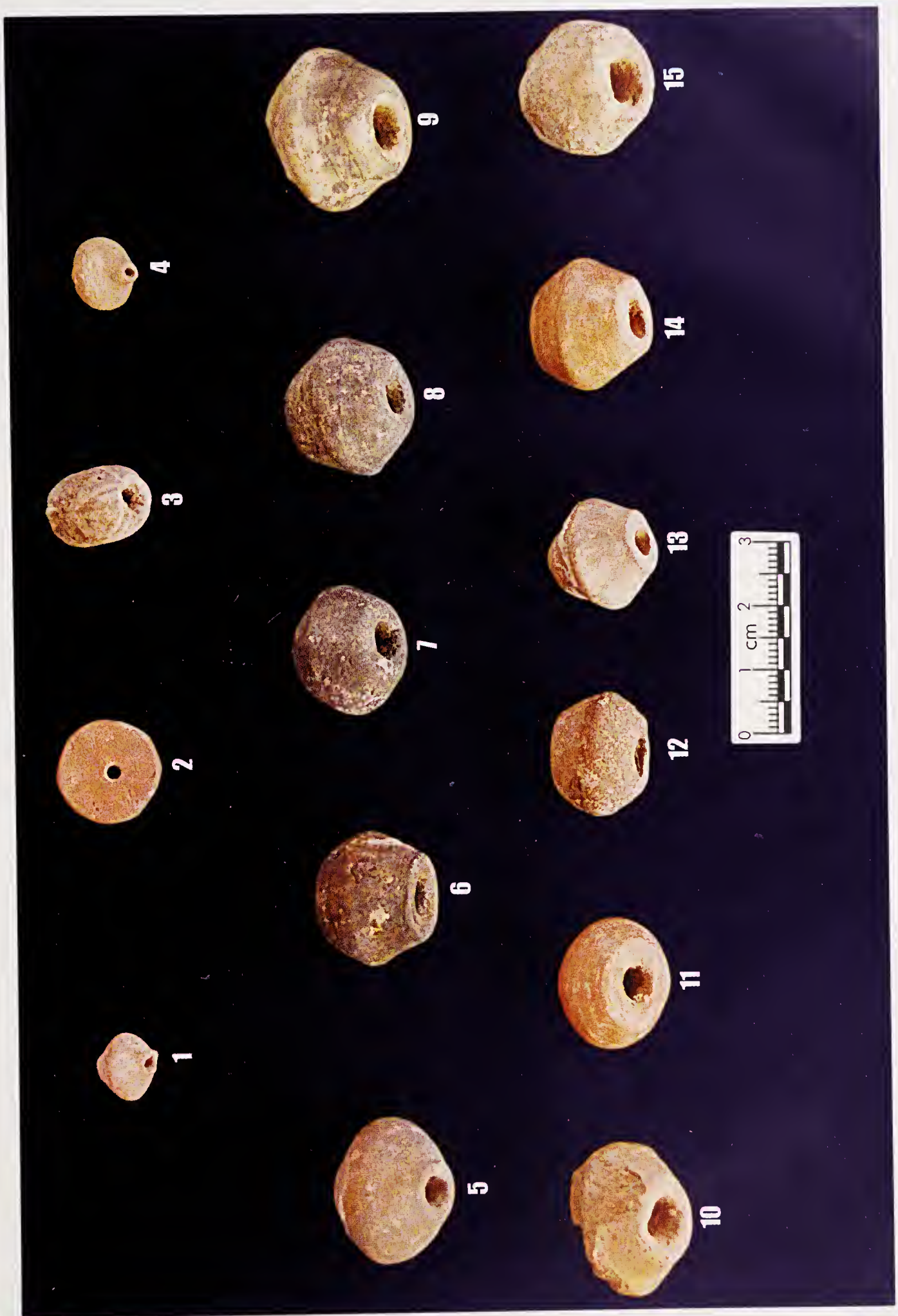


Fig. 40. Carnelian beads





Pl. LXXXIII. Chak 86 : Carnelian beads. See p. 189



Pl. LXXXIV. Chak 86 : Terracotta beads. See p. 189



Table-VI

**LAYER-WISE DISTRIBUTION OF BEADS CLASSIFIED  
ACCORDING TO MATERIAL**

Layer Material	1	2	3	4	Unstratified/ Surface	Total	Percentage
Terracotta	12	4	3	-	10	29	56.86
Carnelian	9	1		1	-	11	21.56
Lapis lazuli	2	1	-	-	-	3	5.88
Chert	1	-	-	-	-	1	1.96
Agate	1	-	-	-	-	1	1.96
Shell	4	-	-	-	1	5	9.8
Quartz	1	-	-	-	-	1	1.96
Total	30	6	3	1	11	51	
Percentage	58.82	11.76	5.88	1.96	21.56		

Table-VII

**LAYER-WISE DISTRIBUTION OF BEADS  
CLASSIFIED ACCORDING TO SHAPE**

Layer Shape	Size	1	2	3	4	Unstratified/ Surface	Total	Percentage
Barrel	Short	-	-	-	-	-	-	-
	Standard	-	-	-	-	-	-	-
	Long	4	1	-			5	9.8
Cylinder	Short	3	1			1	5	9.8
	Standard	-	-	1	-	1	2	3.92
	Long	1	-	1			2	3.92
Tubular	Short	-	-	-	-	-	-	-
	Standard	-	-	-	-	-	-	-
	Long	2					2	3.92
Flat Traingular		1					1	1.96
Toggle shaped		2	1				3	5.88
Bicone	Short	3	1	1	-	3	8	15.68
	Standard	9	1	-	1	4	15	29.41
	Long	-	-	-	-	-	-	-
Biconvex	Short	1	-	-	-	-	1	1.96
	Standard	1	-	-	-	-	1	1.96
	Long	-	-	-	-	-	-	-
Spherical		2	1	-	-	-	3	5.88
Pear shaped		1	-	-	-	-	1	1.96
Vase shaped	Short	-	-	-	-	-	-	-
	Standard					2	2	3.92
	Long	-	-	-	-	-	-	-
	Total	30	6	3	1	11	51	
	Percentage	58.8	11.8	5.9	1.96	21.56		



3. Standard truncated bicone circular  
From the surface (Reg. no. 37)
4. Truncated pear-shaped  
From layer no. 1 (Reg. no. 94)
5. Standard truncated bicone circular, weathered.  
From layer no.1 (Reg.no.50)
6. Standard vase-shaped circular  
From the surface (Reg.no. 60)
7. Standard biconvex circular  
From layer no. 1 (Reg.no.26)
8. Standard vase-shaped circular  
From the surface (Reg.no.61)
9. Standard truncated bicone circular  
From layer no. 1 (Reg.no.59)
10. Standard cylinder circular  
From the surface (Reg.no.69)
11. Standard cylinder circular, weathered  
From layer no.3 (Reg.no.97)
12. Short bicone circular  
From layer no.3 (Reg.no.98)
13. Long cylinder circular, incised with two rows of dots and one row of notches.  
From layer no. 3 (Reg.no. 101)
14. Short bicone circular.  
From the surface (Reg.no.2)
3. Shell: Short truncated cylinder circular  
From layer no.1 (Reg. no. 38)
4. Shell: Long tubular circular  
From layer no.1 (Reg. no. 19)
5. Shell: Short cylinder circular (disc)  
From layer no.1 (Reg.no.16)
6. Shell: Long tubular circular  
From layer no.1 (Reg.no. 65)
7. Lapis lazuli: Toggle-shaped  
From layer no. 2 (Reg.no.86)
8. Lapis lazuli: Long truncated cylinder oval.  
From layer no.1 (Reg.no.15)
9. Agate: Long truncated barrel circular  
From layer no. 1 (Reg.no.57)
10. Lapis lazuli: Standard bicone circular  
From layer no.1 (Reg.no.18)
11. Quartz: Toggle-shaped  
From layer no.1 (Reg.no.31)

## 5. THE POTTERY

The excavation at Chak 86 yielded the well-known Painted Grey Ware ceramic assemblage divisible into eight major groups *viz.*, Red ware, Red-slipped ware, Black on Red ware, Black-and-red ware, Grey ware, Painted Grey Ware, Black ware and other decorated ware. Each of these forms a diagnostic trait in the cultural assemblage of the period (Fig. 42). Table VIII shows the frequency, distribution and percentage of each industry in each layer. Pottery yield is recorded maximum from layer (1). Industry-wise red ware accounts for more than 65% of total assemblage (Fig. 43).

The repertoire of the pottery has regular horizontal striation marks indicating to be prepared on fast wheel but some of the pots are handmade only to a modified degree since the rims thereof are invariably wheel made. A majority of the pottery is with a reddish oxidized core. In a few cases, however, a faint greyish

### C. Other Material

This site has yielded five shell, one chert (?), one agate, one quartz and three lapis lazuli beads. They are described as below:

#### Fig. 41; pl. LXXXVI

1. Shell: Short cylinder oval with incised double lines.  
From the surface (Reg. no. 5)
2. Chert (?) : Long barrel oval with incised double lines.  
From layer no.1 (Reg. no.47)



Pl. LXXXV. Chak 86 : Terracotta beads. See pp. 189, 196



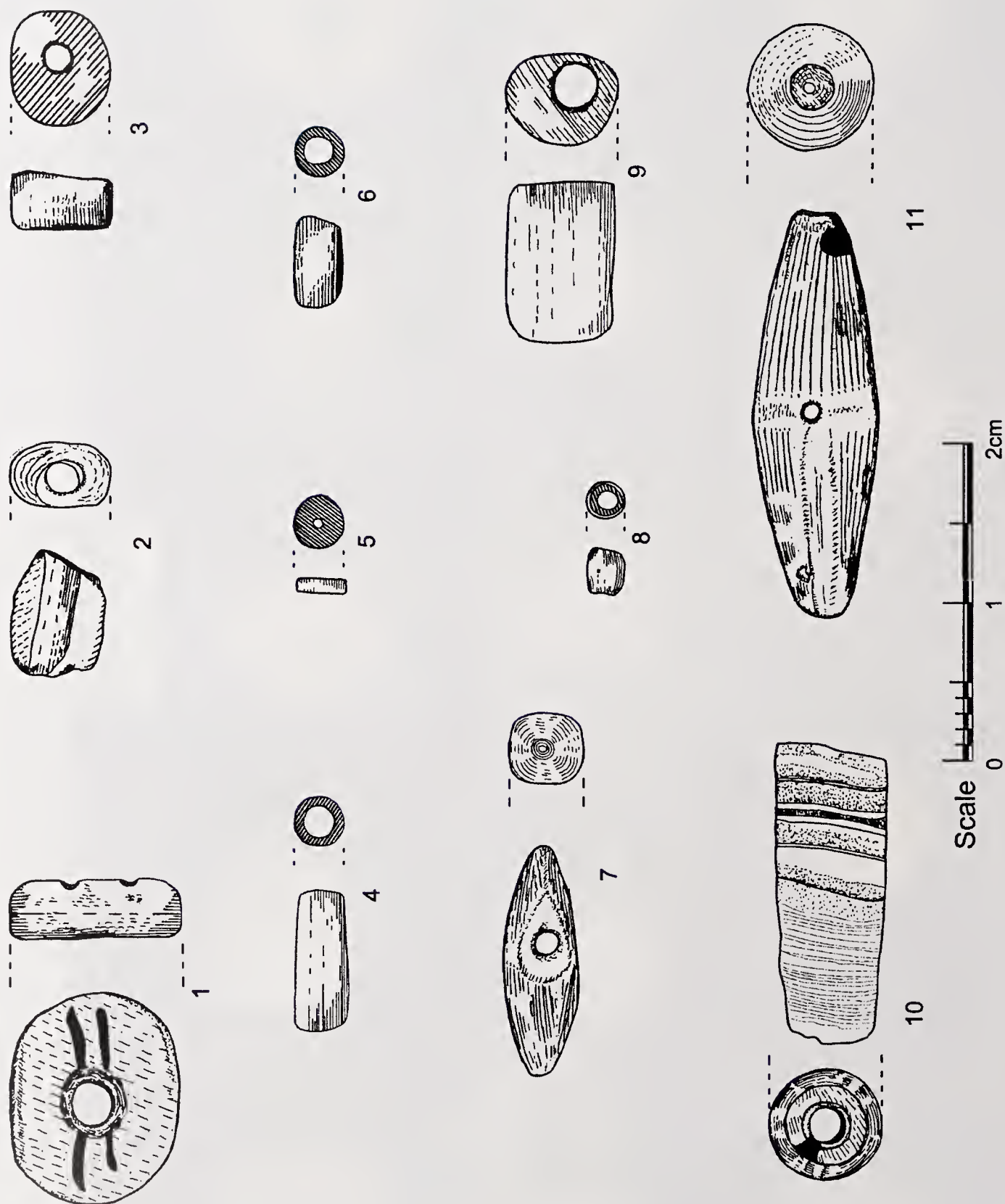


Fig. 41. Beads of other material



Pl. LXXXVI. Chak 86 : Beads of other material. See p. 196



# PERCENTAGE-WISE DISTRIBUTION OF CERAMIC INDUSTRIES

## CHAK 86

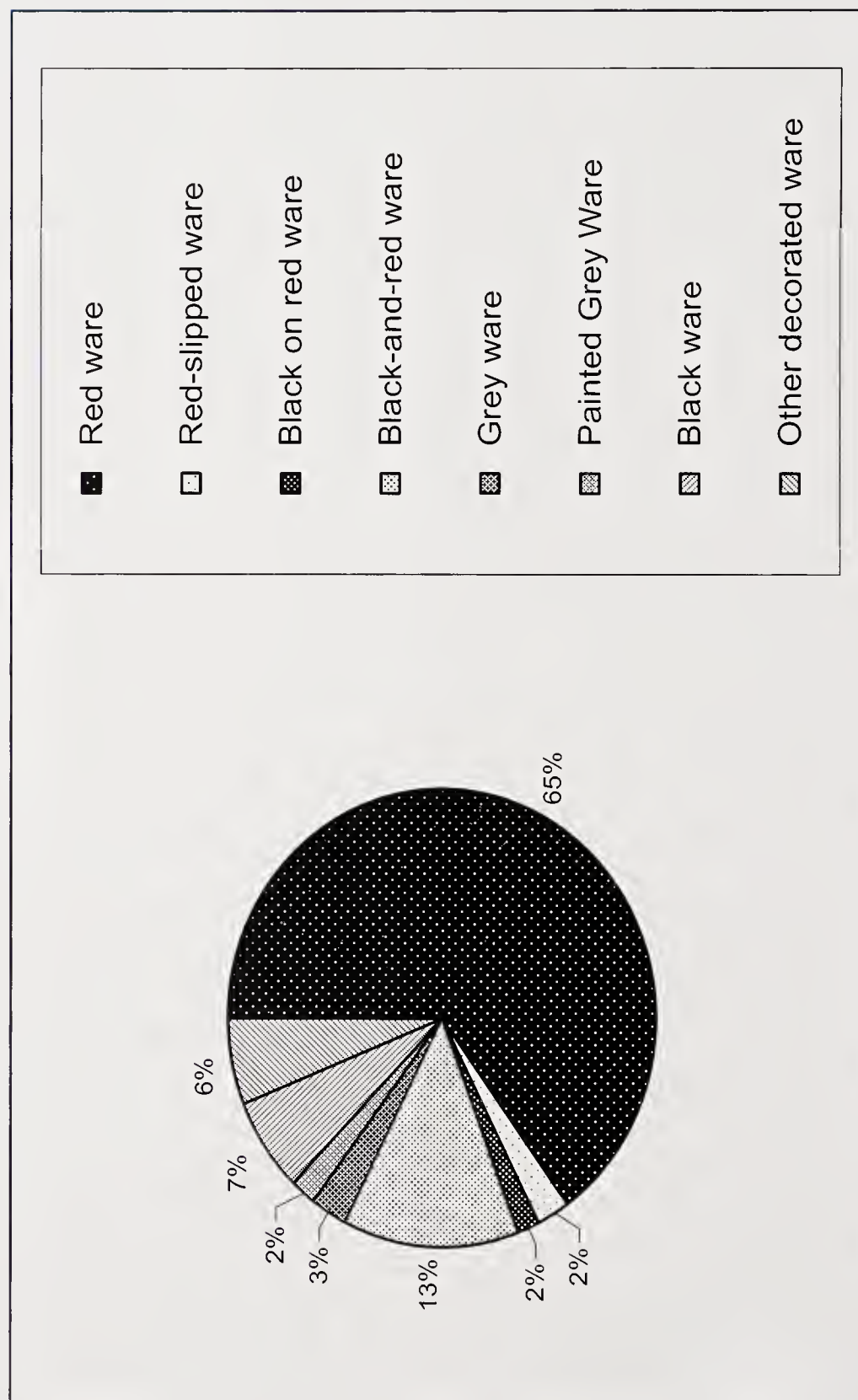


Fig. 42

LAYER-WISE DISTRIBUTION OF THE CERAMIC INDUSTRIES  
CHAK 86

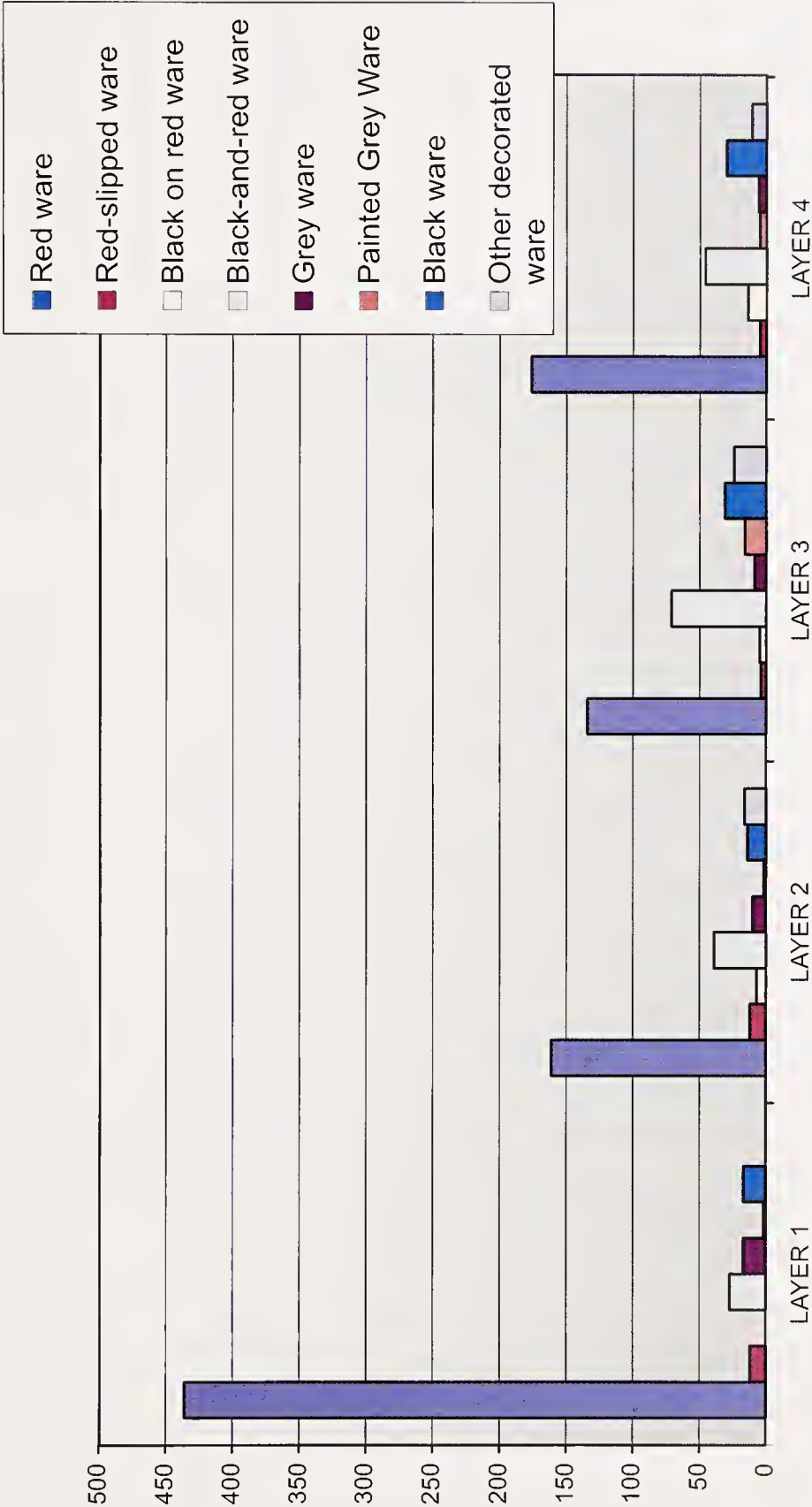


Fig. 43



zone is visible in the core; possibly, they were fired at a lower temperature or for shorter duration. Surface of these potteries varies from red, drab to blotchy grey. Though majority of them are devoid of any surface dressing, a few are treated with a wash or slip. Husk, fine sand and mica have been freely employed as *degraisants*, in case of red ware, and the fabric being medium. The commonly met shapes of the red ware are vase, dish, bowl, storage, jar, basin etc. A few of them are also painted, mostly executed before firing. The colour scheme normally adopted is black on a red background. Among the motifs, mention may be made of horizontal lines, arches, chain motifs, rim bands etc. The other decorated ware includes incised and appliqué variety of pottery. The designs were executed during the leather hard condition. The decorations are found both on the interior and exterior of the vessels consist of horizontal lines, diamonds, wavy line, vertical lines, slashes, dots, concentric circles, mat pattern, etc.

The black-and-red ware has a wholly individualistic appearance distinct alike in fabric and form. Throughout made on wheel and slipped, it shows a lustre as a result of continuous horizontal burnishing, the texture varies from fine to medium consisting of fine sand, husk and straw. As a result of inverted firing, it shows black inside and red outside, the rim portion being black. The ware is fired at different temperature as indicated from the core *viz.*, half black half red, maximum black on the interior and maximum red on the exterior. The shapes include mostly dishes and bowls.

The black ware is characterized by its medium fabric, wheel made and fired at reduced condition and most of them are slipped and burnished. The characteristic shapes of this ware are very few indeed and include bowl and dish only.

The grey ware forms a homogenous group belonging to a well-defined industry. The distinctive features of this group are the superior quality of the paste formed of well-levigated clay and fine thin well burnt fabric achieved with an equally distributed heat in the kiln agreeably fired in reducing condition. In case of large bowls and dishes, it was observed that they were first made on wheel but in order to expand or enlarge the surface, both interior and exterior were beaten with a dabber when it was in leather hard condition. The types include bowls and dishes. In case of Painted Grey Ware, the surface of the body is painted in black before firing. Instances of bi-chrome painted designs are also met with i.e., black and brown and black and chocolate. The common patterns are formed by groups of vertical or oblique strokes below the horizontal rim band. The strokes are sometimes of unequal thickness and thickened towards the end from where the paint brush started. The designs are executed both on the inside and outside of the pot. It includes intersecting lines, dots, dashes, wavy lines, concentric circles, sigma, radiating lines, spiral designs etc. A careful study of the technique of the paintings reveals that the outlines of some of the designs were first drawn in a thin deep black line and the gap is filled later on.

Following select types are illustrated:

### Red Ware

#### Figs. 44-47

1. Fragment of a bowl of red ware with a flat topped thickened rim, roughly convex sides and button base. Of medium fabric showing a completely oxidized core, it is treated with a wash on both sides.

2. Fragment of a deep bowl with a vertical externally clubbed rim, straight sides mildly carinated towards the base. Of medium fabric showing an oxidized core, it is washed on both sides whereas the exterior is executed with two incised horizontal bands at the waist.
3. Fragment of a basin with an incurved, externally collared rim, roughly straight sides mildly carinated towards the base. Of medium fabric, showing an oxidized core, it is treated with a wash on both sides but the exterior is decorated with an incised horizontal band below the rim and similar two parallel bands towards the base.
4. Fragment of a bowl with a featureless rim, roughly tapering sides having externally wavy profile. Of medium fabric showing an oxidized core, it is devoid of any surface dressing.
5. Fragment of a basin with an incurved, externally thickened rim and corrugated sides. Of medium fabric showing a completely oxidized core, it is treated with a wash on both sides.
6. Fragment of a basin with an elliptical collared rim and tapering sides. Of medium fabric showing an unoxidized grey core, its interior is treated with a wash.
7. Fragment of a basin with an incurved, externally thickened rim, mildly carinated to straight sides. Of medium fabric showing a completely oxidized core, the interior is treated with a deep red wash.
8. Fragment of a basin with an incurved, elliptical collared rim having a horizontal groove below, on the exterior and tapering sides. Of medium fabric showing an oxidized core, it is treated with a red wash on the exterior.
9. Fragment of a basin with flat-topped rim and a grooved exterior. Of medium fabric showing a perfectly oxidized core, it is treated with a deep red wash on both sides.
10. Fragment of a basin with an vertical featureless rim mildly carinated to tapering sides. Of medium fabric showing a semi oxidized smoky core, it is devoid of any wash.
11. Fragment of a vase with an out-turned featureless rim, concave neck and bulging profile. Of medium fabric, showing a perfectly oxidized core, it is devoid of any slip or wash.
12. Fragment of a vase with a splayed out, externally thickened rim and mildly carinated neck. Of medium fabric showing an oxidized core, it is treated with a wash on the exterior and decorated with a horizontal groove on the shouler.
13. Fragment of a vase with a splayed out, featureless rim, mildly carinated neck and bulging profile. Of medium fabric, showing a semi oxidized core, it is treated with a red wash on the exterior.
14. Fragment of a vase with an out-turned thickened rim having a medial groove on the top and concave neck. Of medium fabric, showing a perfectly oxidized core, it is treated with an ochre coloured wash.
15. Fragment of a vase with an externally clubbed rim and a bluntly carinated neck. Of medium fabric, showing an unoxidized portion in the lower section of the core, it is treated with a wash.
16. Fragment of a vase with an out-turned featureless rim and a concave neck. Of fine fabric, showing an oxidized core, it is treated with a red wash.
17. Fragment of a vase with an externally clubbed rim and tapering neck. Of medium fabric, showing an oxidized core, it is treated with a wash.



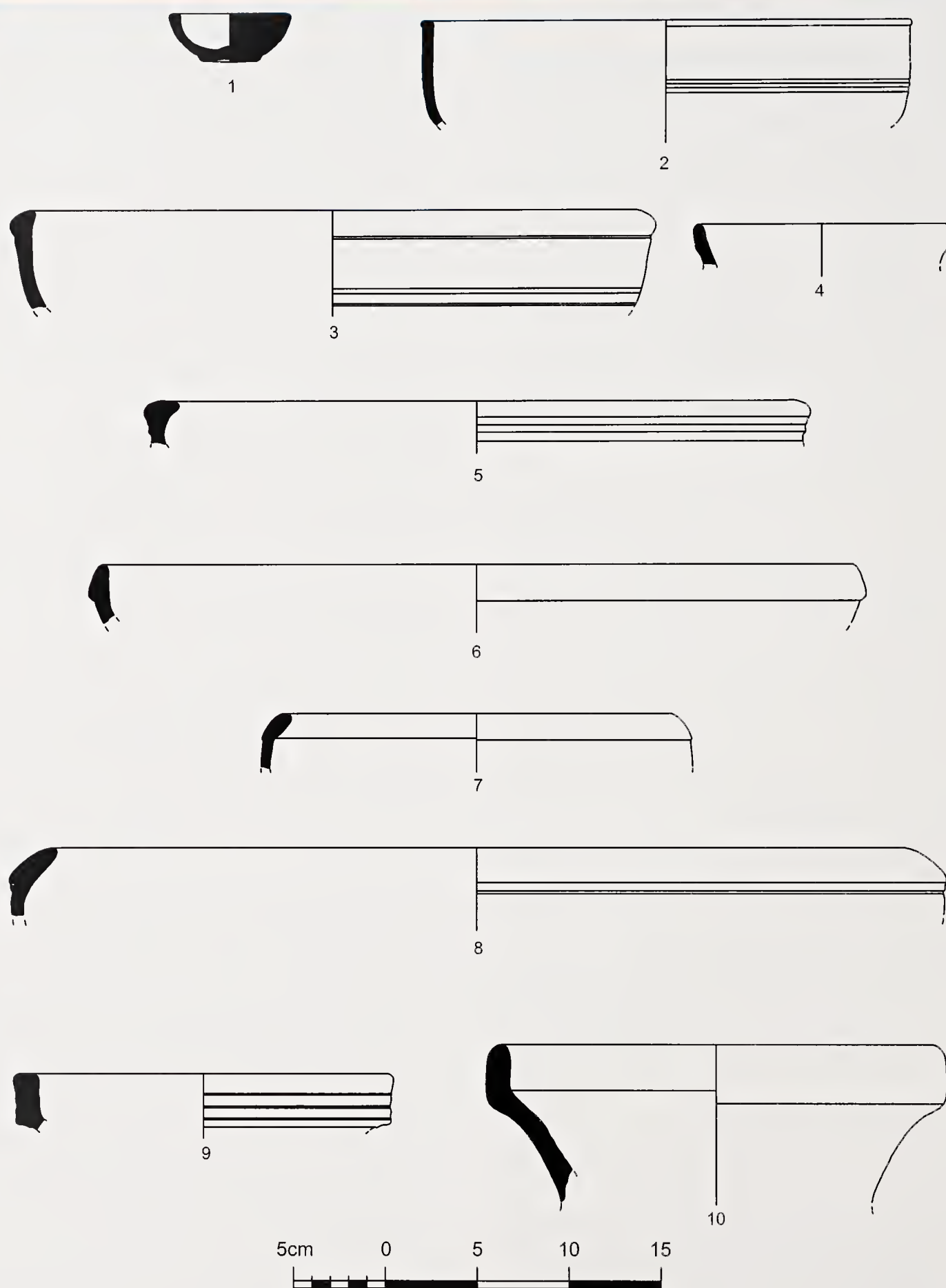


Fig. 44. Red ware

**Table-VIII**  
**FREQUENCIES AND PERCENTAGES (FIGURES IN ITALICS) OF SHERDS OF THE CERAMIC INDUSTRIES**  
**IN EACH LAYER**

Industry Layer	Red Ware	Red-Slipped Ware	Black On Red Ware	Black-And -Red Ware	Grey Ware	Painted Grey Ware	Black Ware	Other Decorated Ware	Total
1	436 79.70	12 2.19	- -	27 4.93	17 3.10	2 0.36	17 3.10	36 6.58	547
2	161 61.68	12 4.59	7 2.68	39 14.94	10 3.83	2 0.76	14 5.36	16 6.13	261
3	134 45.57	4 1.36	5 1.70	71 24.14	9 3.06	16 5.44	31 10.54	24 8.16	294
4	176 60.06	5 1.70	14 4.77	46 15.69	5 1.70	6 2.04	30 10.23	11 3.75	293
Total	907 65.01	33 2.36	26 1.86	183 13.11	41 2.93	26 1.86	92 6.59	87 6.23	1395



18. Fragment of a vase with an externally thickened rim with ledged profile. Of medium fabric, showing an oxidized core, it is treated with an ochre coloured wash.
19. Fragment of a vase with a vertical, externally thickened rim, mildly carinated to a convex base. Of medium fabric, showing an oxidized core, it is treated with a deep red wash and decorated with an irregular incised line below the rim on the exterior.
20. Fragment of a jar with a splayed out thickened rim, roughly concave neck and weakly carinated shoulder. Of medium fabric, showing a completely oxidized core, it is treated with a deep red wash and decorated with a horizontal groove on the shoulder.
21. Fragment of a vase with an externally oval collared rim, a carinated neck and an expanding shoulder. Of medium fabric, showing an oxidized core, it is treated with a wash and the shoulder is decorated with two horizontal grooves.
22. Fragment of a vase with an externally thickened rim and a concave neck. Of medium fabric, showing an unoxidized smoky core, it is treated with a red wash on both sides.
23. Fragment of a vase with an everted rim and a tapering neck. Of medium fabric, showing an oxidized core, it is treated with red wash.
24. Fragment of a vase with an out-turned, externally thickened rim and concave neck. Of medium fabric, showing an oxidized core, it is treated with a deep red wash on the exterior.
25. Fragment of a vase with an out-turned, thickened rim, concave neck and bulging profile. Of medium fabric, showing an unoxidized portion in mid section of the core, it is treated with a wash on both sides.
26. Fragment of a jar with an out-turned oval collared rim and concave neck. Of medium fabric, showing an oxidized core, it is treated with a red wash on both sides.
27. Fragment of a jar with a vertical clubbed, externally grooved rim with a long vertical neck. Of medium fabric, showing a perfectly oxidized core, it is treated with an ochre wash on the exterior.
28. Fragment of a basin with a nail headed rim and a prominent ridge on the neck. Of medium fabric, showing an oxidized core, it is treated with a wash.
29. Fragment of a vase with an out-turned, externally collared rim and vertical neck. Of medium fabric, showing an oxidized core, it is treated with a red wash.
30. Fragment of a vase with an out-turned externally thickened rim and a concave neck. Of medium fabric, showing an oxidized core it is treated with a deep red wash.
31. Fragment of a jar with an out-turned, undercut rim, concave neck and expanding profile. Of medium fabric, showing an oxidized core, it is treated with a deep red wash on the exterior.
32. Fragment of a vase with an out-turned, externally thickened rim, concave neck and bulging shoulder. Of medium fabric, showing an unoxidized grey core, it is devoid of any slip or wash but the shoulder is decorated with two horizontal grooves.
33. Fragment of a vase with an out-turned, externally thickened rim and grooved neck. Of fine fabric and thin in section, showing an oxidized core, it is treated with an ochre wash.
34. Fragment of a dish with a thickened featureless rim and tapering sides. Of medium fabric, showing an oxidized core, it is treated with an ochre wash on the

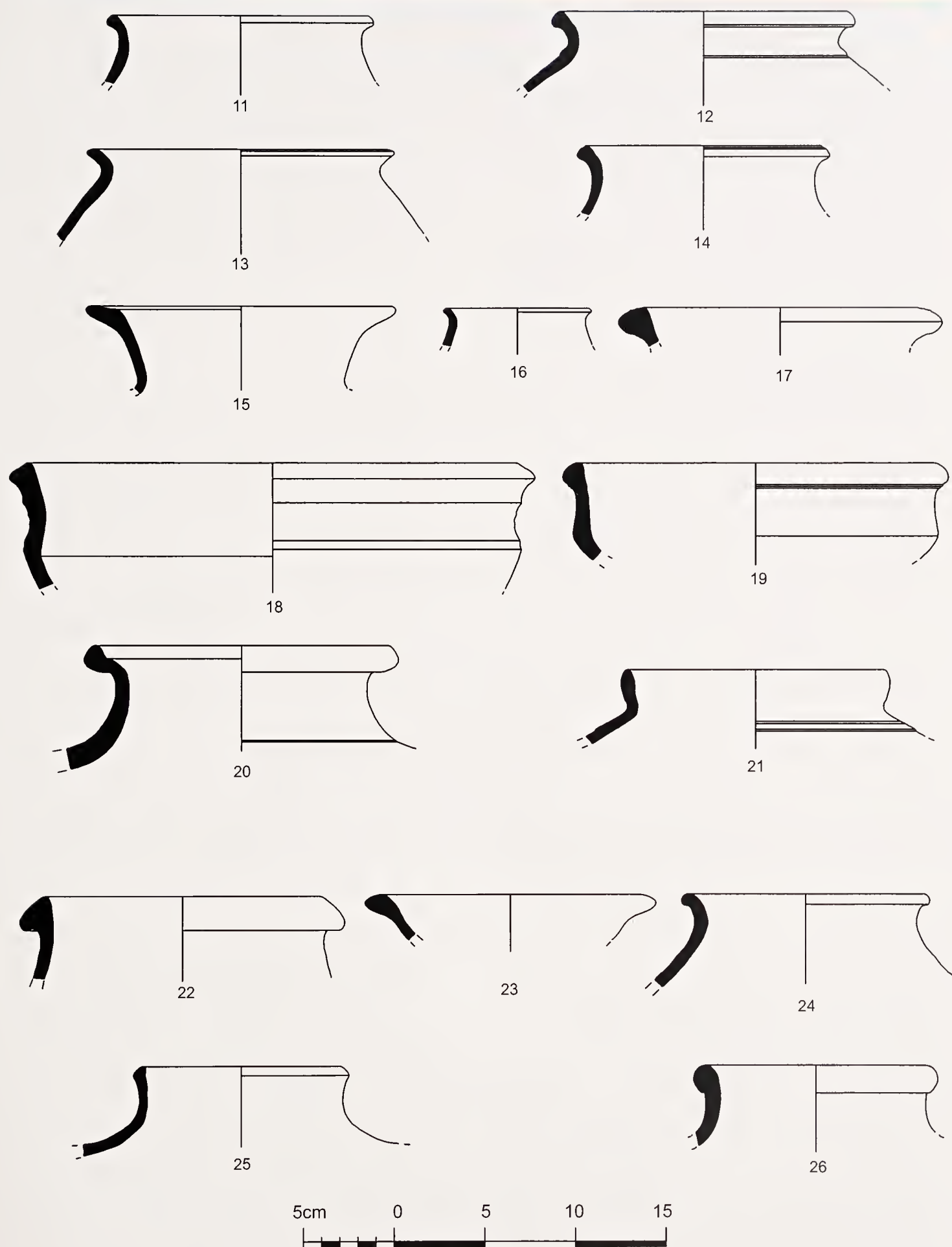


Fig. 45. Red ware



exterior and decorated with a horizontal groove below the rim.

35. Fragment of a large trough with a featureless rim and tapering sides. Of coarse fabric and thick in section, showing a semi oxidized smoky core, it is treated with a wash on the exterior.
36. Fragment of a jar with a vertical clubbed rim, concave neck and bulging shoulder. Of medium fabric, showing a perfectly oxidized core, it is devoid of any slip or wash but it is decorated with three horizontal grooves on the shoulder and below it, executed with impressed pattern consisting of intersecting oblique and horizontal lines.
37. Fragment of a jar with an out-turned featureless rim, concave neck and bulging profile. Of medium fabric, showing a semi oxidized smoky core and blotchy surface, it is devoid of any slip or wash but decorated with two horizontal grooves on the shoulder and below it, executed with pressed designs consisting of intersecting concentric circles and other indeterminate pattern.
38. Fragment of a vase, with an out-turned thickened rim and concave neck. Of medium fabric, showing a perfectly oxidized core, it is treated with an ochre wash.
39. Fragment of a basin with an incurved multiple grooved collared-rim. Of medium fabric, showing a completely oxidized core, it is treated with a wash on both sides.
40. Fragment of a storage-jar with an inturned, flat topped rim and convex sides. Of coarse fabric and thick in section, showing a semi oxidized smoky core, it is devoid of any slip or wash but decorated with a shallow groove below the rim on the exterior and an appliqué horizontal band with incised chain pattern.

## **Red-slipped Ware**

### **Figs. 48-49**

1. Fragment of dish with an inturned featureless rim and roughly straight sides carinated mildly for the base. Of fine fabric, showing a fully oxidized core, it is treated with slip on both sides.
2. Fragment of a dish with a vertical sharpened rim and flaring sides. Of fine fabric, showing a fully oxidized core, it is treated with a deep red slip on both sides.
3. Fragment of a dish with an incurved featureless rim with convex sides carinated mildly for the base. Of fine fabric, showing a perfectly oxidized core, it is treated with a slip on both sides and decorated with a shallow groove on the exterior.
4. Fragment of a dish with an inturned internally thickened rim, convex sides and carinated mildly at the base. Of fine fabric, showing an oxidized core. It is treated with an ochre slip on both sides.
5. Fragment of a bowl with an obliquely splayed featureless rim and tapering sides with a mild carination towards exterior. Of medium fabric, showing a perfectly oxidized core, it is treated with a deep red slip on both sides.
6. Fragment of a dish with a flat-topped rim and straight sides, sharply carinated towards the base. Of medium fabric, showing a perfectly oxidized core, it is treated with a deep red slip and the exterior is decorated with multiple horizontal grooves.
7. Fragment of a dish with a flat-topped externally thickened rim with straight sides. Of fine fabric, showing an oxidized core, it is treated with a deep red slip on both sides.
8. Fragment of a dish with flat-topped rim with rounded sides. Slipped on both sides, the

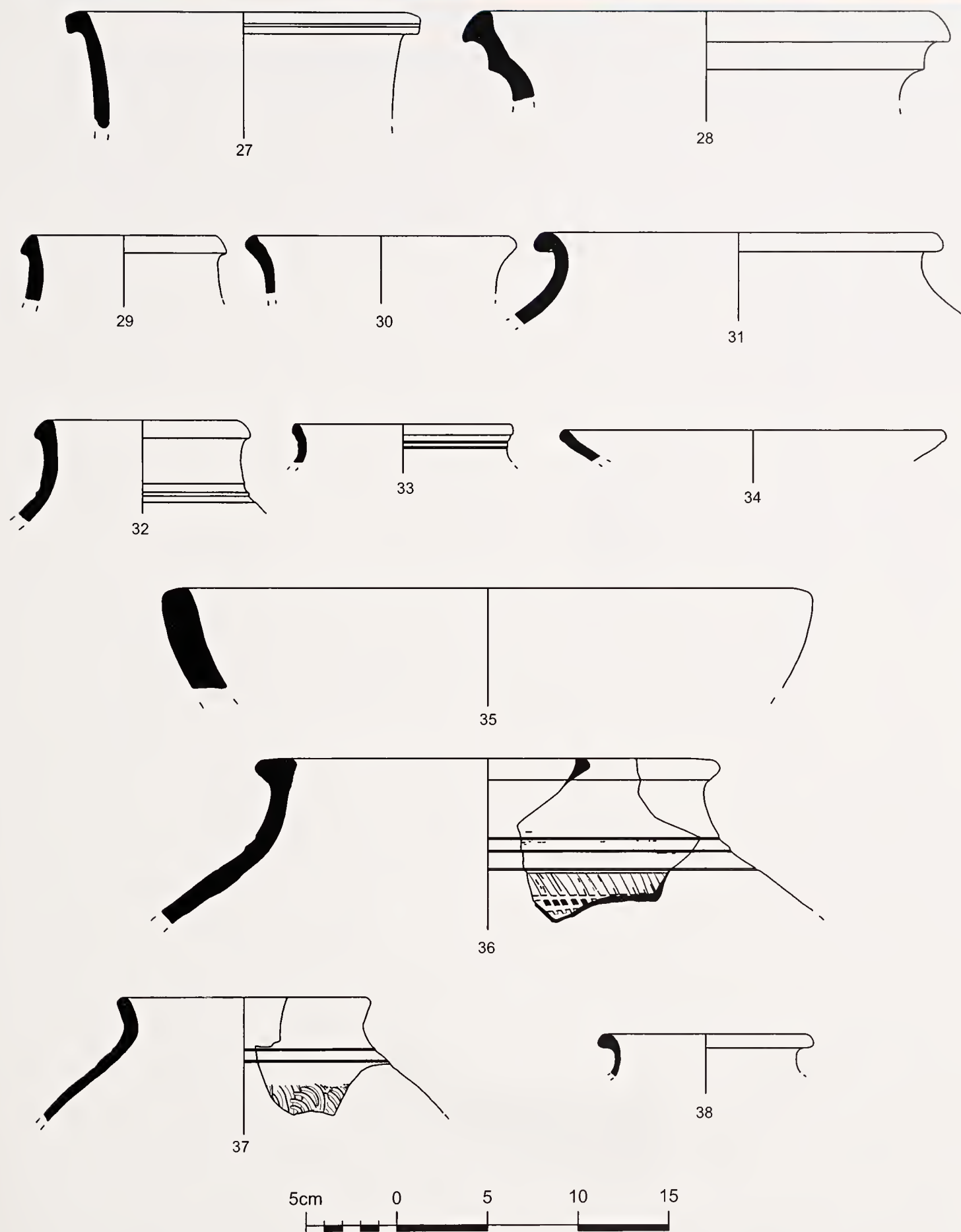


Fig. 46. Red ware



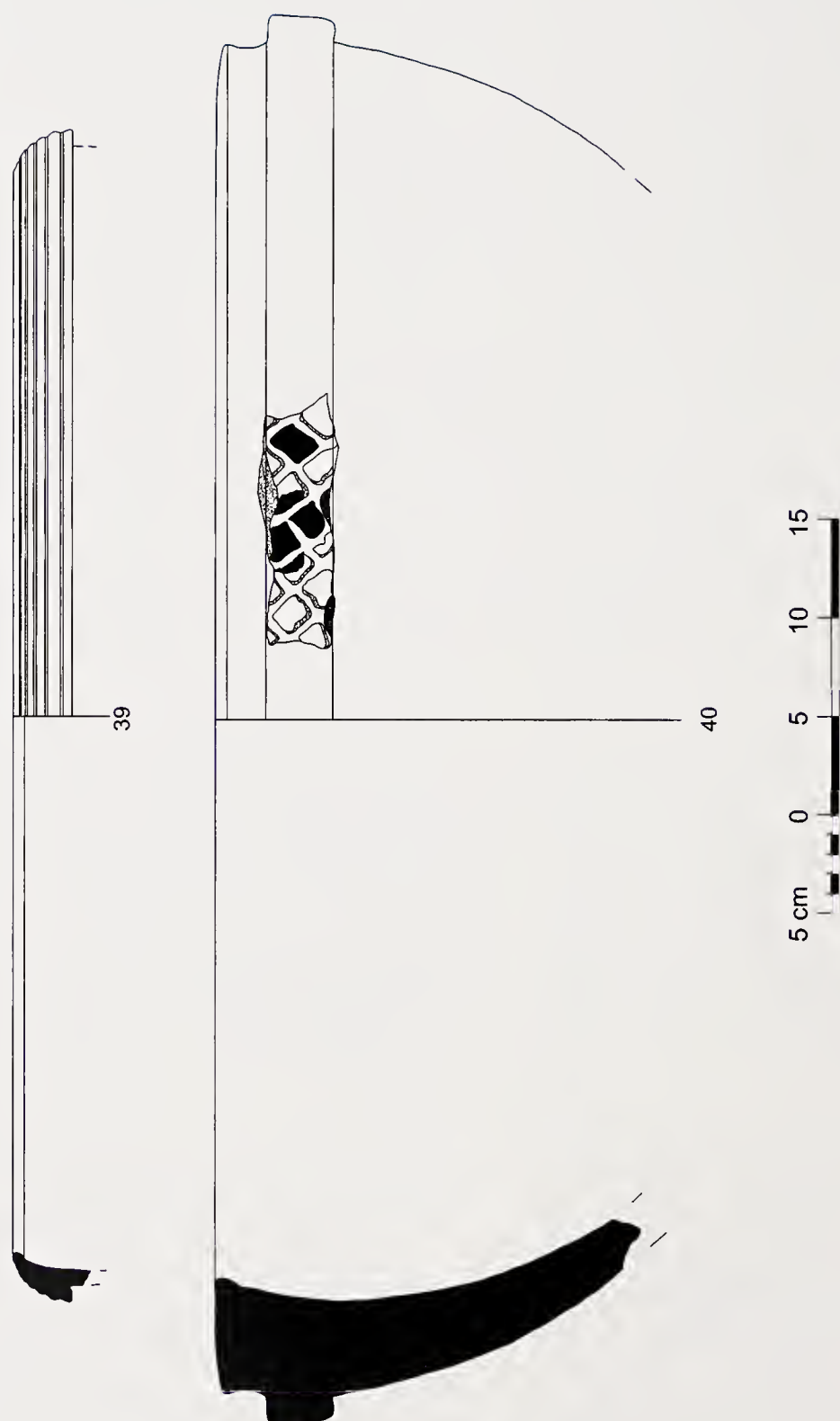


Fig. 47. Red ware

exterior is decorated with two horizontal grooves below the rim and similar grooves towards the base . Of medium fabric, it has an oxidized core.

9. Fragment of a bowl with a vertical featureless rim with roughly rounded sides. Of fine fabric, showing an oxidized core, it is treated with a slip on both sides.
10. Fragment of a bowl with a vertical, progressively sharpened rim and roughly straight sides. Of fine fabric, showing a semi oxidized grey core, it is treated with a chocolate slip on both sides.
11. Fragment of a basin with an incurved externally oval-collared grooved-rim and tapering sides. Of medium fabric, showing an oxidized core, it is treated with a deep red slip internally.
12. Fragment of a jar with an incurved featureless rim and rounded sides. Of medium fabric, showing an oxidized core, it is treated with a slip both externally and internally.
13. Fragment of a basin with an oblique, nail-headed rim and tapering sides. Of medium fabric, showing an oxidized core, it is treated with a deep red slip on the exterior and decorated with a horizontal groove below the rim as well as on the shoulder.
14. Fragment of a vase with an externally clubbed rim and a bluntly carinated neck. Of medium fabric, showing a perfectly oxidized core, it is treated with a slip.
15. Fragment of a jar with a vertical collared rim exterior of which is treated with a dark red slip. Of medium fabric, it has an oxidized core.
16. Fragment of a vase with a flanged featureless rim, a pronounced ridge below it and a concave neck. Of medium fabric, showing an oxidized core, it is treated with a red slip

on outside.

17. Fragment of a vase with an out-turned, externally thickened rim and concave neck. Of comparatively fine fabric, showing an oxidized core, it is treated with a slip.
18. Fragment of a vase with an externally thickened featureless rim and concave neck. Of medium fabric, showing an unoxidized grey core, it is treated with an ochre slip.
19. Fragment of a vase with an out-turned externally thickened rim and long vertical neck. Of fine fabric, showing a semi oxidized smoky core, it is treated with a chocolate slip on the exterior.
20. Fragment of a jar with a flaring, incipiently flanged rim and concave neck. Of medium fabric, showing a perfectly oxidized core, it is treated with a deep red slip on both sides.

#### **Black on red ware**

#### **Pls. LXXXVII-LXXXVIII**

1. Fragment of a jar with mild carination at shoulder and globular body. Of medium fabric, showing an oxidized core, its exterior is treated with a slip and painted in black with a broad horizontal band with suspended double arches.
2. Fragment of a dish with an incurved, thickened rim with weakly carinated sides. Of medium fabric, showing an oxidized core, it is slipped and painted in black on rim with a horizontal band on the exterior whereas on the interior, below the rim, a shallow but wide horizontal groove is executed.
3. Fragment of a shoulder portion of a jar of red ware, treated with a red slip on the exterior and painted in black with a thin and broad band. Of medium fabric, it has an oxidized core.



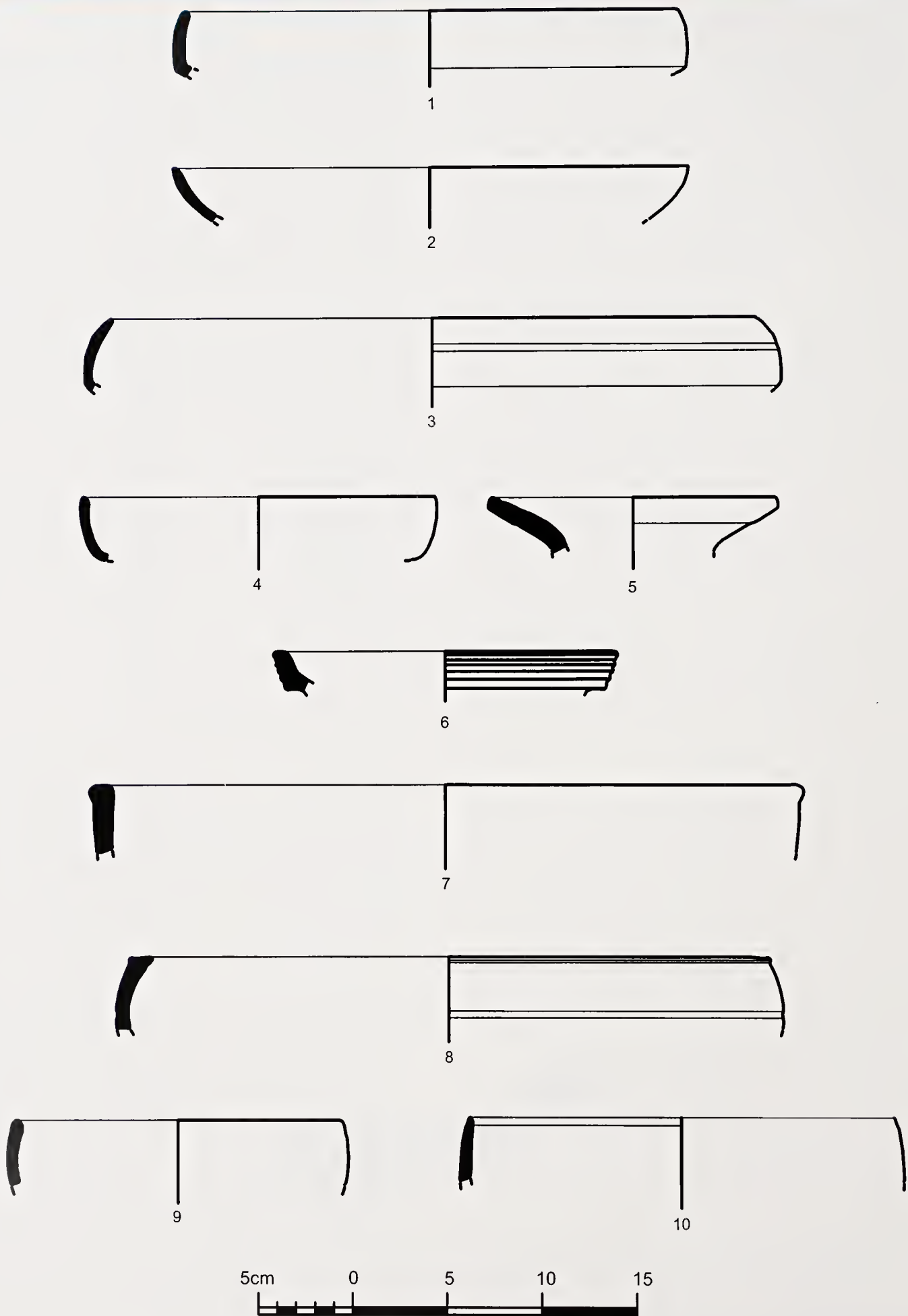


Fig. 48. Red-slipped ware

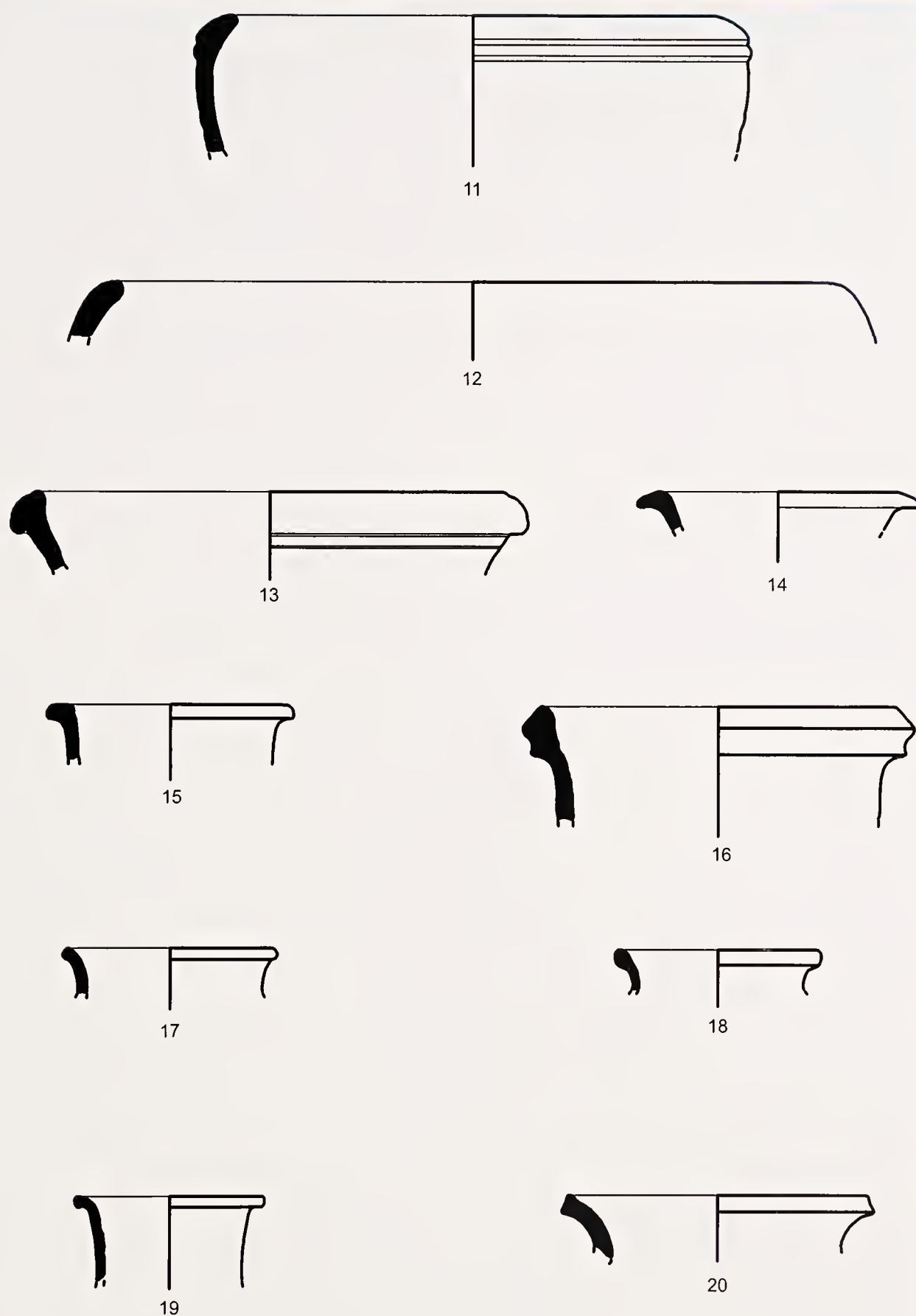


Fig. 49. Red-slipped ware



4. Fragment of a vase with a carinated neck, treated on the exterior with a red slip and painted in black with a broad and a thin band. Of fine fabric, it has an oxidized core.
5. Fragment of a red ware. Of medium fabric, showing an oxidized core, it is treated with a red slip on the exterior and painted in black with two paralleled horizontal bands.
6. Fragment of a vase with a mild carination at belly. Of fine fabric, showing an oxidized core, its exterior is treated with a slip and painted in black with a horizontally placed chain motif within a double lined border.
7. Fragment of a jar with a splayed out, externally bevelled rim and carinated neck. Of medium fabric, showing an oxidized core, it is slipped on both sides but exterior is painted in black on rim and neck with a broad horizontal band.
8. Fragment of a vase with an out-turned thickened rim and internally carinated neck. Of medium fabric, showing an oxidized core, it is treated with a wash and painted in black with horizontal band on the rim.
9. Fragment of a wide-mouthed jar with a short out-turned rim and concave neck. Of medium fabric, showing an oxidized core, it is slipped on the exterior and painted in black on rim with a horizontal band.
10. Fragment of a vase with an out-turned rim and concave neck. Of medium fabric, showing an oxidized core, it is slipped on the exterior and rim is painted in black.
11. Fragment of a sharply carinated neck portion of a jar, treated with a wash, exterior of which is painted in black with a broad horizontal band. Of medium fabric, it has an oxidized core.
12. Fragment of a jar with a splayed out externally bevelled rim. Of medium fabric, showing an oxidized core, it is slipped on

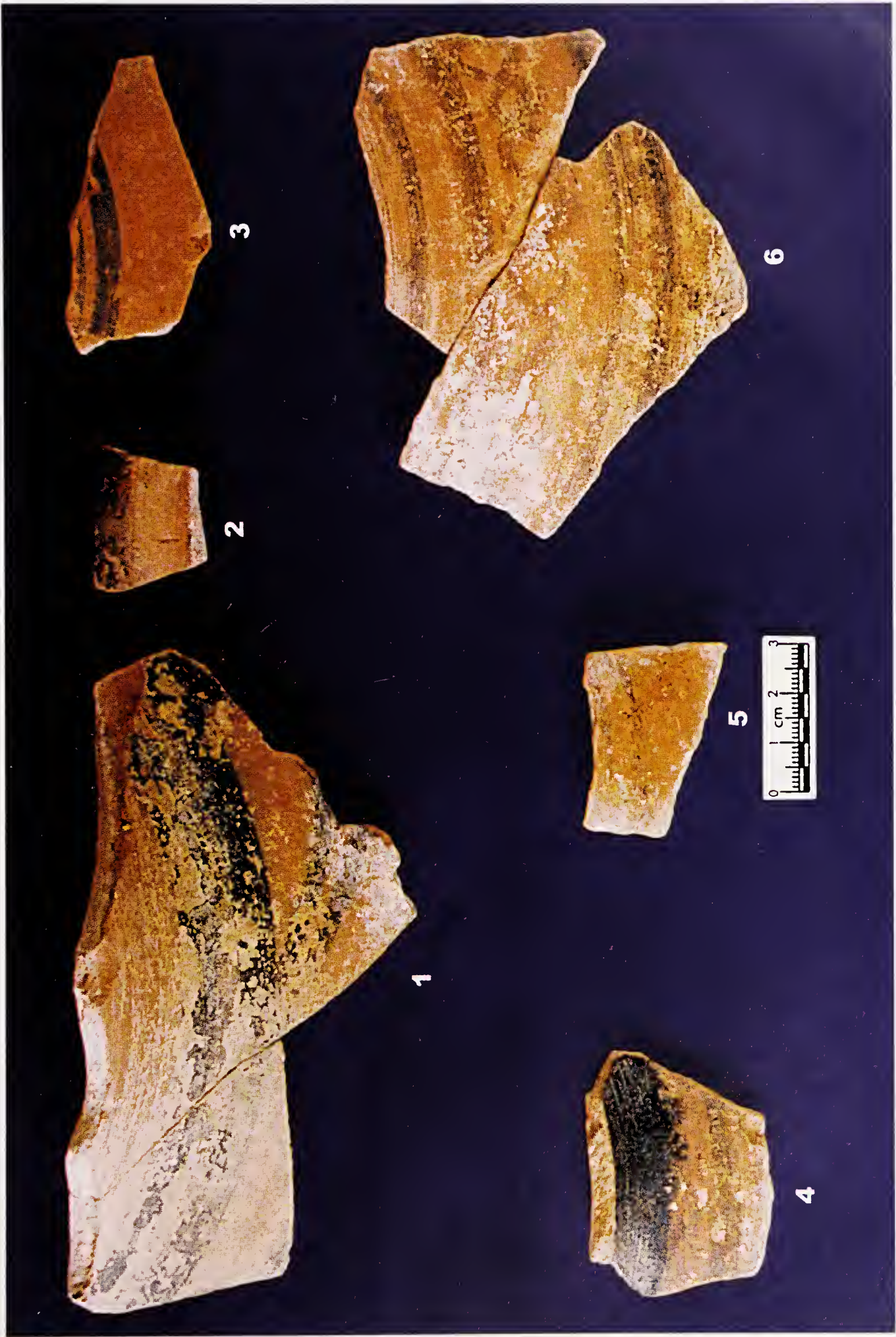
the interior whereas the exterior is painted in black on rim and neck portion. A horizontal groove is executed below the rim on the interior.

### **Black-and-red ware**

#### **Figs. 50-51**

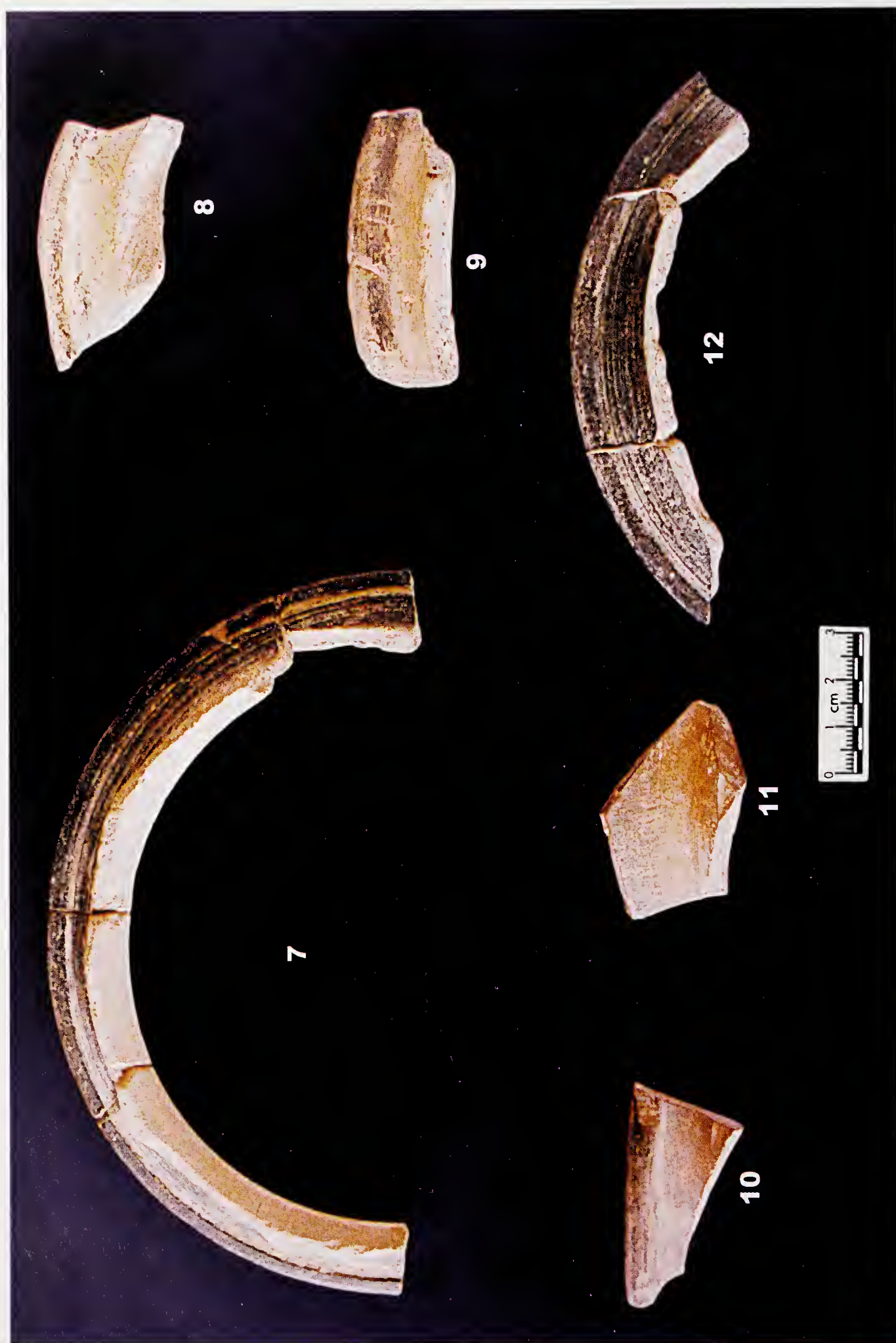
1. Fragment of a bowl with convex sides and featureless rim. It is slipped, polished and burnished on both sides. Of medium fabric, it has a partially oxidized core.
2. Fragment of a dish with roughly vertical sides mildly carinated towards the base and sharpened rim. It is slipped and burnished on both sides. Of medium fabric, it has a partially oxidized core.
3. Fragment of a dish with expanding mouth and featureless rim, mildly carinated towards the base. Of medium fabric, it has a partially oxidized core.
4. Fragment of a dish with an inturned sharpened rim and convex sides, carinated to a flat base. Of medium fabric, it has a partially oxidized core.
5. Fragment of a dish with out-curved featureless rim and convex sides, mildly carinated to a rounded base. Of medium fabric, it has a partially oxidized core.
6. Fragment of a bowl with everted rim with roughly straight sides, having a mild horizontal groove on the exterior at belly. Of medium fabric, it has a partially oxidized core.
7. Fragment of a bowl with an inturned, featureless rim and convex sides. Of medium fabric, it has a partially oxidized core.
8. Fragment of a bowl with tapering sides and progressively sharpened rim. Of medium fabric, it has a partially oxidized core.





Pl. LXXXVII. Chak 86 : Black on red ware. See pp. 211, 214





Pl. LXXXVIII. Chak 86 : Black on red ware. See p. 214

9. Fragment of a bowl with convex sides and incurved featureless rim with a shallow carination towards the base. Of medium fabric, it has a partially oxidized core.
10. Fragment of a dish with convex sides and internally thickened inturned rim carinated to a flat base. On the exterior, a post-firing vertical line is incised below the rim. Of medium fabric, it has a partially oxidized core.
11. Fragment of a dish with tapering sides and slightly internally thickened rim. Of medium fabric, it has a partially oxidized core.
12. Fragment of a bowl with roughly straight sides and incurved featureless rim. Of medium fabric, it has a partially oxidized core.
13. Fragment of a dish with roughly straight sides and sharpened rim. A shallow groove is found on the exterior towards the base. Of medium fabric, it has a partially oxidized core.
14. Fragment of a dish with concave sides and sharpened rim, carinated mildly to a sagger base. Of medium fabric, it has a partially oxidized core.
15. Fragment of a dish with convex sides and internally thickened rim. Of medium fabric, it has a partially oxidized core.
16. Fragment of bowl with tapering sides and progressively sharpened rim. Of medium fabric, it has a partially oxidized core.
17. Fragment of a bowl with concave sides and incurved featureless rim. Of medium fabric, it has a partially oxidized core.
18. Fragment of a bowl with tapering sides with incurved featureless rim. Of medium fabric, it has a partially oxidized core.
19. Base fragment of a dish having flaring sides and a deep horizontal groove below with a sharp carination on the exterior and a flat base. Of medium fabric, it has a partially oxidized core.
20. Base fragment of a bowl with straight sides, carinated towards a flat base. Of medium fabric, it has a partially oxidized core.
21. Fragment of a roughly straight-sided bowl with an incurved internally thickened rim. Of medium fabric, it has a partially oxidized core.
22. Base fragment of a concave-sided bowl with a flaring rim carinated to a rounded base. Of medium fabric, it has a partially oxidized core.
23. Base fragment of a concave-sided bowl mildly carinated to a rounded base. It is slipped and burnished. Of medium fabric, it has a partially oxidized core.
24. Fragment of a dish with an incurved thickened rim and convex sides sharply carinated for a sagger base. On the exterior, above the carination a horizontal shallow groove is executed. Of medium fabric, showing a partially oxidized core, it is treated with a slip and heavily burnished on both sides.
25. Fragment of a shallow bowl with convex sides and featureless rim, carinated to a rounded base. On the exterior, below the carination, a horizontal shallow groove is executed at the base. The base on both interior and exterior is heavily burnished with irregular patterns obliterating all striation marks. The base was rounded with a dabber when it was in leather hard condition.
26. Fragment of a dish with a vertical featureless rim with convex sides, mildly carinated for a sagger base. Of medium fabric, showing a partially oxidized core, it is treated with a slip and heavily burnished at the base.



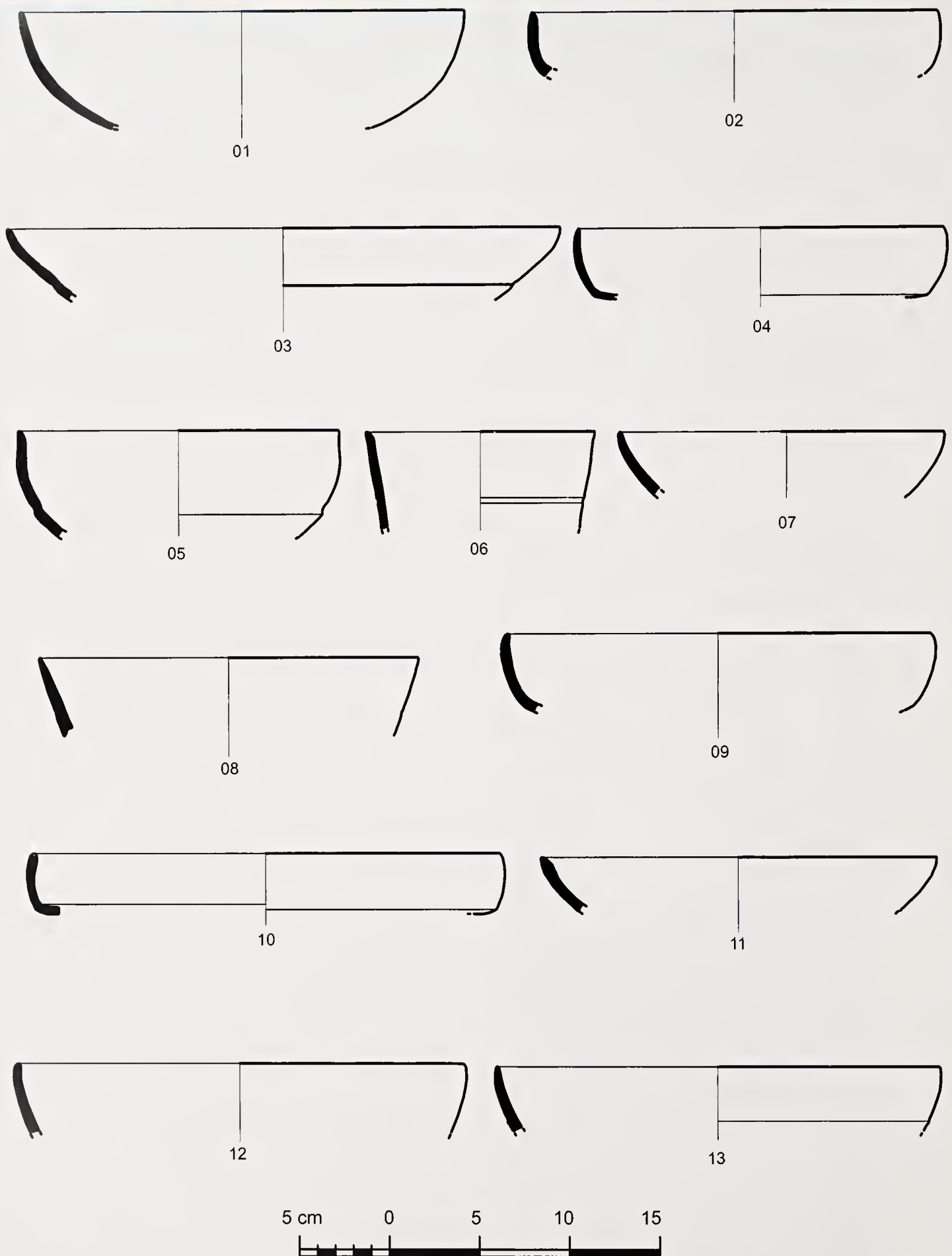


Fig. 50. Black-and-red ware

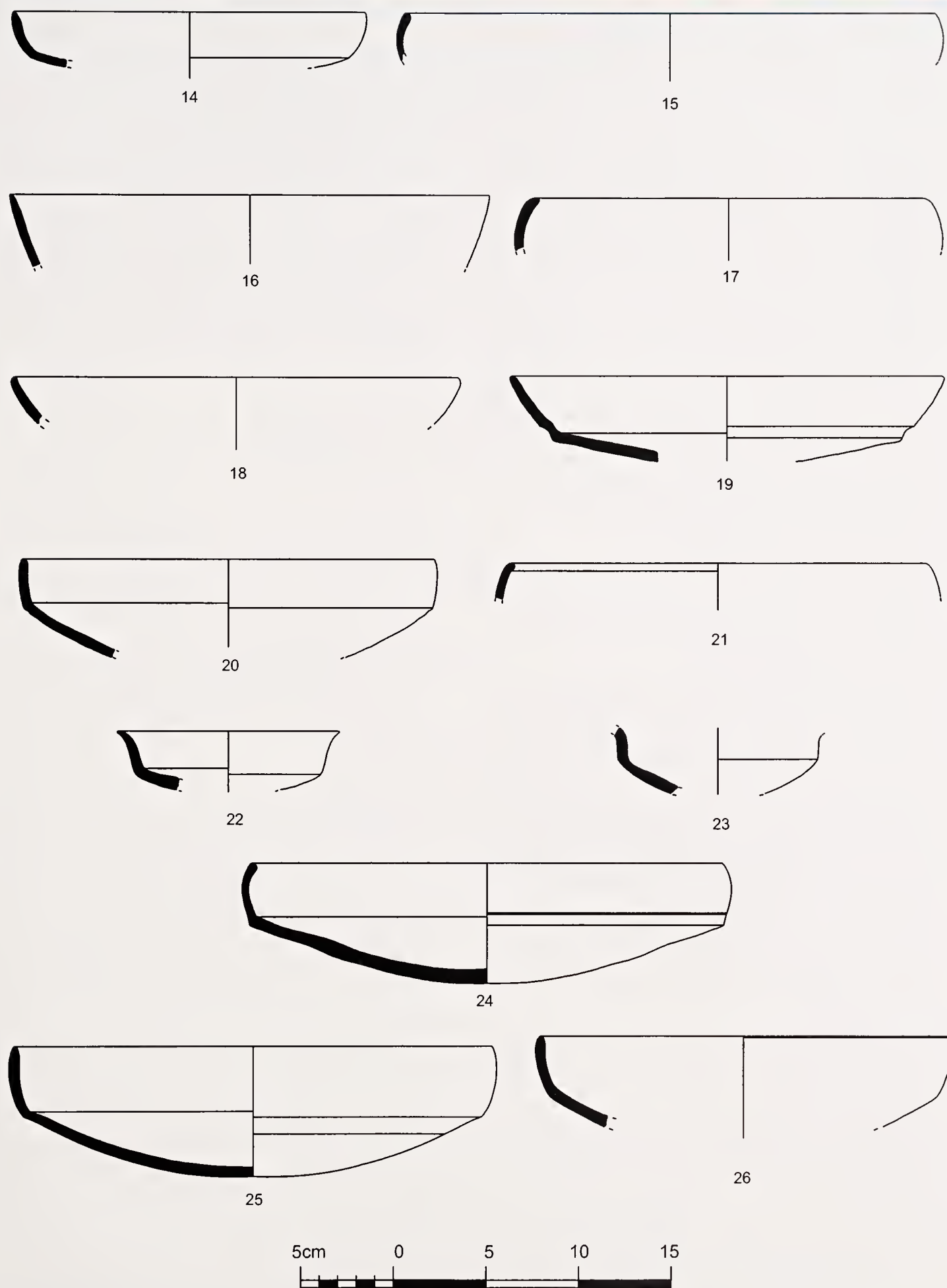


Fig. 51. Black-and-red ware



**Grey ware****Fig. 52**

1. Fragment of a dish with an inturned, featureless rim and rounded sides, mildly carinated to a sagger base. Of fine fabric, showing a reduced grey core, it is treated with a dark slip internally.
2. Fragment of a bowl with convex sides and featureless rim. Of fine fabric, it has reduced grey core.
3. Fragment of a dish with a vertical sharpened rim and roughly straight sides, bluntly carinated to a convex base. The exterior is treated with a dark slip. Of medium fabric, it has a reduced grey core.
4. Fragment of bowl with a featureless rim and roughly convex sides treated externally and internally with a wash. Of medium fabric, it has a reduced grey core.
5. Fragment of a bowl with a sharpened rim and convex sides, is devoid of any slip. Of fine fabric, it has a reduced grey core.
6. Fragment of a dish with an inturned internally thickened rim and roughly straight sides, internally treated with a dark slip. Of medium fabric, it has a reduced grey core.
7. Fragment of a bowl with a flat-topped rim and roughly tapering sides, treated internally with a wash. Of medium fabric, it has a reduced core.
8. Ring-footed base fragment of a dish with tapering sides. Of fine fabric, it has a reduced grey core.
9. Fragment of a dish with a mild carination towards the base. Of fine fabric, it has a reduced grey core.
10. Fragment of a dish with an inturned featureless rim and convex sides bluntly carinated to a convex base. Treated with

chocolate slip on both sides, the exterior is executed with horizontal grooves. Of fine fabric, it has a reduced grey core.

11. Fragment of a bowl with a featureless rim and convex sides treated externally with a dark slip. Of fine fabric, it has a reduced grey core.
12. Fragment of a bowl with a vertical featureless rim and roughly straight sides, treated with a slip on both sides. Of fine fabric, it has a reduced grey core.

**Painted Grey Ware****Pls. LXXXIX-XCI**

1. Base-fragment of a dish of grey ware. It is painted in black on the inside with a group of vertical strokes having thickened ends. Of fine fabric, it has a reduced grey core.
2. Fragment of a grey ware painted in black on the inside with three dots running parallel to a straight line. Of fine fabric, it has a reduced grey core.
3. Fragment of a grey ware, painted in black forming rows of grouped oblique dashes inside. Of fine fabric, it has a reduced grey core.
4. Base fragment of a mica dusted grey ware painted in black on the inside with groups of wavy lines. Of fine fabric, it has a reduced grey core.
5. Fragment of a grey ware painted in black on the inside with a group of wavy lines. Of fine fabric, it has a reduced grey core.
6. Fragment of a grey ware painted in black on the inside with groups of vertical and horizontal lines. Of fine fabric, it has a reduced grey core.
7. Fragment of a grey ware painted in black on the inside with a group of oblique strokes

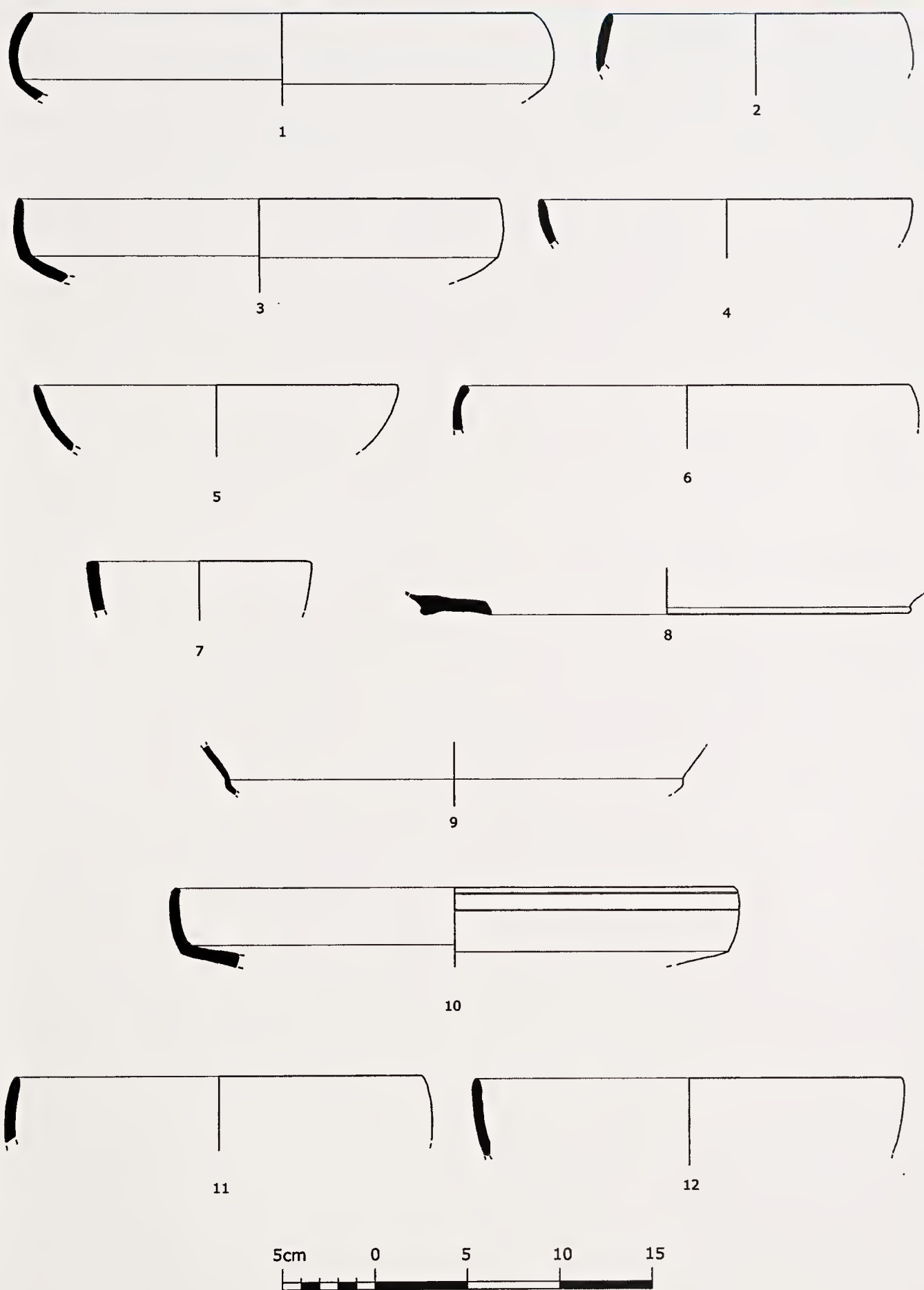


Fig. 52. Grey ware





Pl. LXXXIX. Chak 86 : Painted Grey Ware. See pp. 220, 223

- and traces of indeterminate design are found on the outside also. Of fine fabric, it has a reduced grey core.
8. Fragment of a grey ware, painted in black on the inside with six parallel lines joined at one end and traces of similar design are found adjacent to it. On the exterior, a ghost impression of black painting is found. Of fine fabric, it has a reduced grey core.
  9. Base fragment of a grey ware painted in black on the inside with two grouped oblique dashes and two thick strokes while the exterior is having a darker slip. Of fine fabric, it has a reduced grey core.
  10. Fragment of a grey ware painted in black on the inside with an indeterminate design. Of fine fabric, it has a reduced grey core.
  11. Fragment of a grey ware painted in black on the inside with four vertical strokes with thickened ends. Of fine fabric, it has a reduced grey core.
  12. Fragment of a straight-sided bowl with an internally grooved rim. The inner side is painted in black with a thick horizontal rim band and two oblique lines below it. The outer rim is painted in brown below which two intersecting oblique strokes are painted in black. Of fine fabric, it has a reduced grey core.
  13. Fragment of a grey ware with weak carination on the outside and painted in black with four vertical lines having thickened ends. Of fine fabric, it has a reduced core.
  14. Fragment of a grey ware inner side of which is painted in black with a series of eight wavy vertical lines while outside is washed with pale chocolate colour. Of fine fabric, it has a reduced grey core.
  15. Fragment of a convex-sided bowl with a vertical internally sharpened rim. It is painted in black on the inside with seven vertical lines below a horizontal rim-band and on the outside with a thick brown rim-band. Of fine fabric, it has a reduced grey core.
  16. Fragment of a convex-sided bowl with a vertical featureless rim. It is painted in black on the inside with a thick horizontal rim-band and nine vertically paralleled lines generated from the band. The outer rim is painted with a thick horizontal brown band and the body part is painted in black having seven vertical strokes four of which are intersected with three horizontal lines. Of fine fabric, it has a reduced grey core.
  17. Fragment of a grey ware painted in black with a group of seven vertically hyperbolic strokes on the outside and two vertical strokes on the inner side. Of fine fabric, it has a reduced grey core.
  18. Fragment of an incurved bowl with an incurved featureless rim. It is painted in black at rim with a thick horizontal band spreading upto top edge of outer rim, while at the outside are a group of seven oblique strokes. Of fine fabric, it has a reduced grey core.
  19. Fragment of a convex-sided bowl with a vertical featureless rim, inner side of which is painted in black with a thick horizontal rim-band having five oblique strokes generated from it. The outer rim-band is thicker with brown-pigmented painting. Of fine fabric, it has a reduced grey core.
  20. Fragment of a grey ware painted in black on the inside with a group of vertically parallel lines across a mild carination and the outside with three vertical strokes above a horizontal groove. Of fine fabric, it has a reduced grey core.
  21. Fragment of a bowl with sides slightly carinated towards the base. It is painted in





Pl. XC. Chak 86 : Painted Grey Ware. See p. 223

black on the inside with two groups of diametrical strokes separated at the point of carination and on the outside, with a thick rim-band in pale-chocolate colour below which intersecting strokes are painted in black. Of fine fabric, it has a reduced core.

22. Base fragment of a grey ware painted in black on the inside within two groups of diametrical strokes and outside is painted in black with four parallel lines. Of fine fabric, it has a reduced grey core.
23. Fragment of a grey ware painted in black on the inside with three parallel lines and the outside with a group of five oblique strokes having thickened ends. Of fine fabric, it has a reduced grey core.
24. Base fragment of a dish of grey ware, painted in black on the inside with two groups of diametrical strokes and the outside with a group of three hyperbolic lines. Of fine fabric, it has a reduced core.
25. Bowl of a grey ware with featureless rim, convex sides and sagger base. It is painted in black on inside with five groups (each group having seven strokes) of vertically aligned wavy strokes across the pot, intersected at the base with four groups of similar strokes. Each of the four gaps is painted with a group of seven wavy lines. In each case, the strokes are painted starting from the base (thick end) towards the rim (thinner) over a sharp black outline. The base portion is heavily burnished. The exterior is also painted in black with six groups of hyperbolic and oblique strokes having thickened lower ends wherein many cases, more than two strokes are clubbed together. The outer base is also heavily burnished. Of fine fabric, it has a reduced grey core (Pl. XCII).

## Black ware

**Fig. 53**

1. Fragment of a bowl of black-slipped ware with an inturned thickened rim and roughly straight sides. The exterior is treated with a shallow groove below the rim, and two similar horizontal grooves are found at the belly. Of medium fabric, it has a reduced dark grey core.
2. Fragment of a bowl of black burnished ware with an internally sharpened rim and convex sides. Slipped on both sides, it has a heavily burnished interior. Of medium fabric, it has a reduced grey core.
3. Fragment of a bowl of black polished ware with an internally sharpened rim and convex sides. Of fine fabric, it has a reduced grey core.
4. Fragment of a dish of black ware with sharpened, roughly tapering sides, carinated to a sagger base. Of medium fabric, showing a reduced dark grey core, it is devoid of any slip.
5. Fragment of a bowl of black ware with an inturned sharpened rim and tapering sides. Of medium fabric, showing a reduced grey core, it is devoid of any slip.
6. Fragment of a dish of black-slipped ware with a vertical, featureless rim, and convex sides, carinated to a rounded base. Of medium fabric, showing a reduced core, it is treated with a slip on both sides.
7. Fragment of a bowl of black polished ware with an incurved featureless rim and convex sides. Slipped on both sides, interior is darker with a smooth finish. Of medium fabric, it has a reduced grey core.
8. Fragment of a bowl of black polished ware with an inturned featureless rim and convex





Pl. XCI A. Chak 86 : Painted Grey Ware, interior decoration. See pp. 220, 223, 225





Pl. XCI B. Chak 86 : Painted Grey Ware, exterior decoration. See pp. 220, 223, 225





*Pl. XCII. Chak 86 : Painted Grey Ware, bowl. See p. 225*

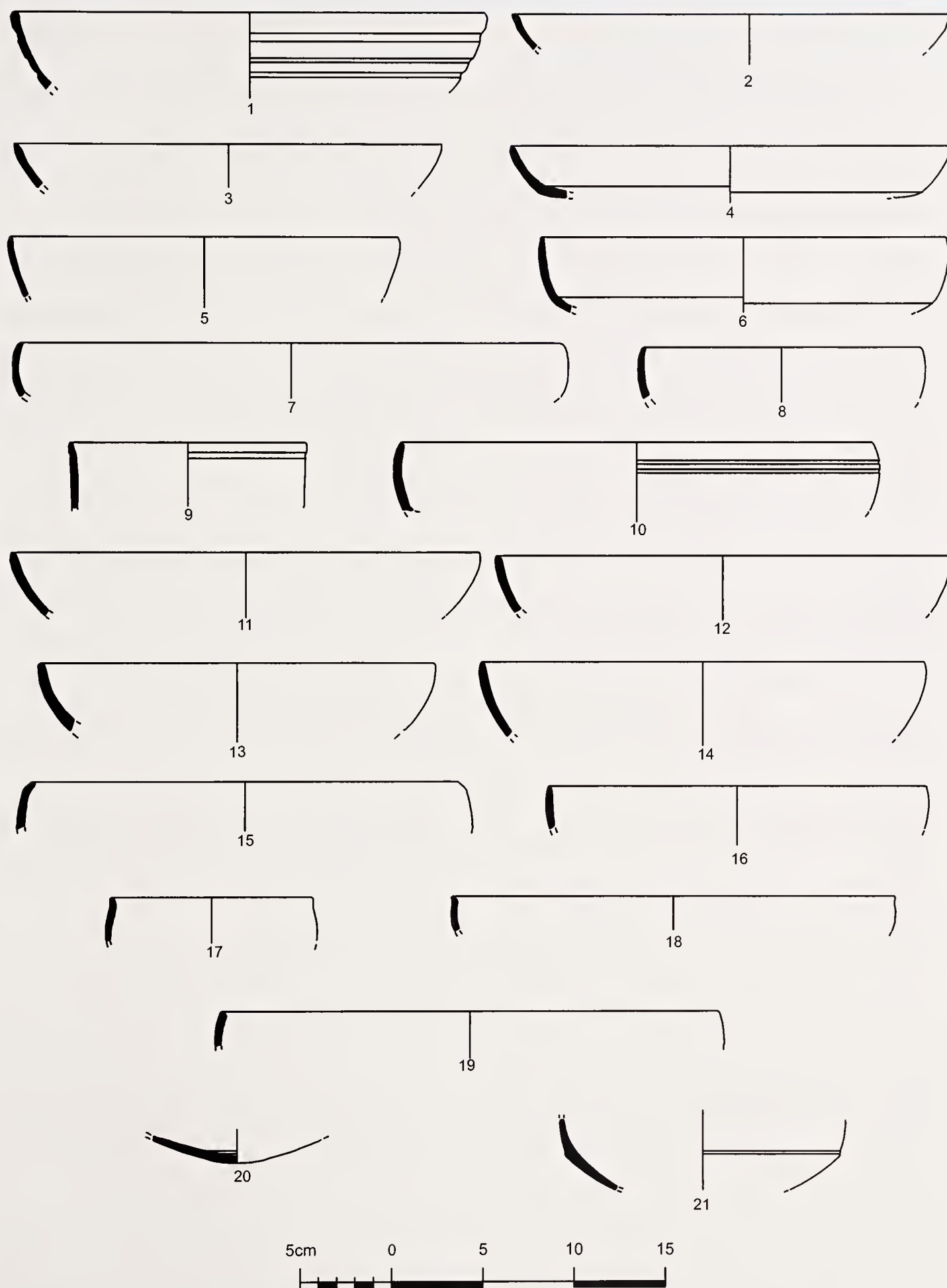


Fig. 53. Black ware



sides. Of medium fabric, showing a reduced grey core, it is slipped on both sides.

9. Fragment of a bowl of black-slipped ware with a vertical, internally sharpened rim and straight sides. Exterior is treated with a thin slip and a horizontal groove below the rim. Of medium fabric, it has a reduced grey core.
10. Fragment of a bowl of black-slipped ware with a vertical sharpened rim and rounded sides. Slipped on both sides, the exterior is treated with two horizontal grooves below the rim. Of medium fabric, it has a reduced grey core.
11. Fragment of a bowl of black-slipped ware with vertical featureless rim and convex sides. Of medium fabric, it has a reduced grey core.
12. Fragment of a bowl of black-slipped ware with a vertical featureless rim and convex sides. Of fine fabric, showing a reduced grey core, it is treated with a dark slip both externally and internally.
13. Fragment of a bowl of black-slipped ware with vertical featureless rim and convex sides. Of medium fabric, it has a reduced grey core.
14. Fragment of a bowl of black burnished ware with a sharpened rim and convex sides. Of fine fabric, showing a reduced dark grey core, it is treated with a dark wash and burnished on both sides.
15. Fragment of a bowl of black polished ware with an incurved featureless rim and roughly straight sides. Of fine fabric, showing a reduced grey core, it is slipped and polished on both sides.
16. Fragment of a bowl of black burnished ware with a vertical sharpened rim and convex sides. Of fine fabric, showing a reduced grey

core, it is treated with a wash and burnished on both sides.

17. Fragment of a bowl of black-slipped ware with an outcurved featureless rim and roughly straight sides. Of fine fabric showing a reduced grey core, it is slipped on both sides.
18. Fragment of a bowl of black-slipped ware with an out-turned, featureless rim and rounded sides. Of fine fabric, showing a reduced grey core, it is slipped on both sides.
19. Fragment of a bowl of black-slipped ware with an internally thickened rim and roughly straight sides. Of fine fabric, it has a reduced grey core.
20. Fragment of a rounded base of a vase of black ware. Of medium fabric, showing a reduced grey core, husk and chopped storms are used as filler with coarse sand as tempering material. Having a rough finish on the exterior, the interior is treated with a mica powdered darker wash.
21. Fragment of a convex base of a dish of black ware with a carination on the exterior towards the base, distinguished by a groove at carination. Of fine fabric, showing a reduced grey core, it is treated with a wash on the interior.

### **Other Decorated Ware**

#### **Pls. XCIII-XCV**

1. Fragment of a middle portion of a red ware. Of medium fabric, showing a completely oxidized core, its exterior is decorated with irregularly incised criss-cross lines.
2. Fragment of a middle portion of a red ware. Of medium fabric, showing an unoxidized grey core, its exterior is impressed with zig-zag designs enclosed between vertical lines.

3. Fragment of a middle portion of a black and red ware. Of medium fabric, showing an incompletely oxidized core, its exterior is decorated with an impressed panel consisting of concentric circles, sun motif, and other indeterminate pattern.
4. Fragment of a middle portion of a black-and-red ware. Of medium fabric, showing an incompletely oxidized core, its exterior is decorated with an impressed design consisting of sun motif, concentric circles and other fragmentary pattern.
5. Fragment of a middle portion of a red ware. Of medium fabric, showing a fully oxidized brick-red core, its exterior is decorated with an impressed design formed by intersecting concentric circles.
6. Fragment of a middle portion of a red ware. Of medium fabric, showing a completely oxidized core, its exterior is decorated with irregular intersecting strokes.
7. Fragment of a middle portion of a red ware. Of medium fabric, showing a semioxidized core, its exterior is decorated with an impressed design consisting of leaf pattern.
8. Fragment of a middle portion of a red ware. Of medium fabric, showing a semioxidized core, its exterior is decorated with regularly produced horizontal grooves.
9. Fragment of an upper portion of a red ware. Of medium fabric, showing a fully oxidized core, its exterior is decorated with an impressed panel consisting of regularly produced vertical lines.
10. Fragment of an upper portion of a red ware. Of medium fabric, showing an oxidized core, its exterior is impressed with mesh pattern below a horizontal groove.
11. Fragment of a middle portion of a black and red ware. Of medium fabric, showing an incompletely oxidized core, its exterior is decorated with impressed design consisting of horizontal lines.
12. Fragment of a middle portion of a black and red ware. Of medium fabric, showing an incompletely oxidized core, its exterior is decorated with an impressed panel formed by concentric circles with radiating lines and other indeterminate pattern.
13. Fragment of a middle portion of a red ware. Of medium fabric, showing an oxidized core, its exterior is impressed with mat pattern.
14. Fragment of a middle portion of a red ware. Of medium fabric, showing an unoxidized smoky grey core, its exterior is decorated with an impressed panel consisting of roughly horizontal lines above a shallow groove and slanting strokes.
15. Fragment of an upper portion of a red ware. Of medium fabric, showing a semioxidized core, its exterior is decorated with a horizontal band of incised zig-zag strokes.
16. Fragment of a middle portion of a red ware. Of medium fabric, showing a semioxidized core, its exterior is roughened with incrustations whereas interior is impressed with mesh pattern.
17. Fragment of a middle portion of a red ware. Of medium fabric, showing fully oxidized core, its rib on the exterior is incised with roughly vertical short strokes.
18. Fragment of an upper portion of a red ware. Of coarse fabric, showing a semioxidized core, its shoulder is decorated with regularly produced oblique slashes above irregular horizontal incisions.
19. Fragment of an upper portion of a red ware with a flat topped, grooved rim. Of medium fabric, showing an oxidized core, its exterior is decorated with a horizontal row of finger pressed design.





Pl. XCIII. Chak 86 : Other decorated ware. See pp. 230, 231





Pl. XCIV. Chak 86 : Other decorated ware. See p. 231



20. Fragment of a basin of red ware with an inturned, featureless rim. Of medium fabric, showing an oxidized core, its exterior is decorated with incised criss-cross lines below a horizontal groove.
21. Fragment of a middle portion of a red ware. Of medium fabric, showing a semioxidized core, it is decorated with a horizontally placed appliqué ribbing with short vertical incised strokes.
22. Fragment of a middle portion of a red ware. Of coarse fabric and thick section, showing an unoxidized core, its exterior is decorated with an appliqué horizontal ribbing with a series of oblique slashes.



Pl. XCV. Chak 86 : Other decorated ware. See pp. 231, 234





# SUMMARY OF RESULTS

### Discovery

The first survey of the Bikaner area was conducted by James Tod and subsequently followed by Malik Muhammad Din, L.P. Tessitori and Aurel Stein, resulting in the discovery of a large number of mounds in the region. It was in 1950-53, A. Ghosh combed through the area and discovered many Harappan, PGW and Early Historical sites including Tarkhanewala-Dera and Chak 86 along the palaeo-channels of River Sarasvati. He had taken up sondages at Tarkhanewala-Dera and Chak 86 respectively unveiling the remains of Mature Harappan and PGW matrices.

### Location

Tarkhanewala-Dera and Chak 86 (Lat. 29° 14' N, Long 73° 14' E) are individual mounds located in the dried up bed of river Sarasvati in Anupgarh tehsil, District Ganganagar of Bikaner division of Rajasthan. Both these centrally protected sites are located at a distance of about 6 km north of Anupgarh on the State Highway No. 3 leading to Ganganagar. They are situated at a distance of 250 m from each other.

### Objective of the Excavation

In 2004, the Ministry of Culture approved

‘Sarasvati Heritage Project’ and decided to conduct excavations at Adi Badri, Hansi and Bhirrana in Haryana; Juni Kuran in Gujarat and Baror, Tarkhanewala-Dera and Chak 86 in Rajasthan. The present field work was taken up on a large scale to:

- (1) Ascertain the cultural sequence of subterranean deposits.
- (2) Determine settlement pattern and habitational expanse.
- (3) Establish the network of relationship through near-neighbourhood analysis among the sites located in the ancient dried up course of River Sarasvati.

### TARKHANEWALA-DERA

#### Stratigraphy

Originally the ancient mound was about 4 m high. Due to cultivation and brick manufacturing the site has been reduced to the present ground level. Approximately the site extends over an area of 4.5 hectares. In all the 11 trenches (A1, B1, C1, XA1, AB1, XC1, XD1, YA1, YB1, YC1 and YD1) of 10 X 10 m were excavated.

The excavations have revealed a single cultured site, i.e., Mature phase of the Harappan Culture and has preserved only one structural phase. The cultural deposit ranges from 1.90 m to 1.95 m. which has



been divided into 5 layers. All the structures are resting on layer 3 and are sealed by layer 1. Layer 2 is contemporary to the structures.

## Structures

In all twenty-two structures were unearthed during the course of the excavation. Save for two pyriform potter's kilns lined with single course of sun-dried bricks and two fire altars lined with mud-bricks, a mud floor and one mud wall structure, all remaining sixteen structures are made of mud-bricks. The bricks used measure 28 x 14 x 7 cm and 32 x 16 x 8 cm (4:2:1) and all of them are sun-dried. The structures are north-south and east-west oriented mainly but some even run obliquely. The bricks were laid in English bond. The structures are either square or rectangular in shape and were used for residential purpose. The width of the walls is of 1, 2, and 3 bricks. Plaster was not found on any of the structures except for the mud-walls (STR 18A and B) plastered with greyish mortar.

## Pottery

The excavation at Tarkhanewala-Dera has yielded a Mature Harappan ceramic assemblage. It falls into five major group's viz., red ware, grey ware, red slipped ware, black on red ware and other decorated ware. Pottery yield diminishes gradually from layer (1) to layer (5), layer (1) recording the maximum. Industry-wise, red ware accounts for more than 78% of total assemblage. And less than 10% of pottery is either painted or decorated which occurs largely in the upper level. The common shapes are beaker, goblet, perforated jar,

storage-jar, dish-on-stand, basin, dish, bowl etc. Few red ware is also painted, mostly executed before firing. The colour scheme normally adopted is black on a red background. The repertoire of painting comprises naturalistic, seminaturalistic and geometric designs. Among the motifs, mention may be made of *pipal* leaf, palm tree, *acacia* tree, banana, fish motif, fish scale, sun symbol, circle, parallel lines and other indeterminate patterns. The other decorated ware includes incised and appliqué variety. The decoration was executed during the plastic or leather-hard condition. The designs, executed both on the interior and exterior of the vessel, consists of wavy lines, parallel lines, herring bone pattern, slashes, intersecting lines, criss-cross etc.

## Antiquities

The antiquities made of stone, terracotta, shell, bone and copper were unearthed. The stone objects included blades of chert, touchstone, tablets, sling balls, amulets, weights, drill-bits, and beads of agate, black stone, amethyst, lapis lazuli and carnelian; terracotta objects included animal and human figurines, sling balls, marbles, earrings, crucibles, baby feeder cup, pyramidal objects, discoids, tablets, hopscotch, toy cart frames, spinning tops, spindle whorls, spools, amulets, gamesman, castle, pendant; faience bangles; bone objects comprising awl, engravers and stylus; shell bangles and spearhead, bangle, chisel, rods, antimony rod, earrings, fish-hooks, needles and rings made of copper. Besides the above, one seal and a sealing were also reported.

### CHAK 86

#### Stratigraphy

Chak 86 is spread over an area of 5.5 hectares. Here also the horizontal method of excavation was adopted and three trenches (A1, A2 and ZA1) of 10 x 10 m were excavated. This is a single cultured site of PGW settlement, with a total deposit of 2.5 m, marked into five layers. Unlike Tarkhanewala-Dera this site revealed two structural phases.

#### Structures

In all ten structures were exposed, of these three belong to Phase I and seven to Phase II. In Phase I two mud-brick structures and an oval-shaped hearth of clay were exposed. The nature of the structures could not be ascertained as they are embedded in the section. In Structures 1 and 2 mud-bricks and mud-mortar were used, the brick size was 28 x 20 x 10 cm and they were made of one course only. These structures are on the top of layer 4 and sealed by layer 3.

In Phase II seven circular hutments were traced on plan. They vary in size from 1.65 m to 2.05 m whereas the thickness of the perimeter of these huts varies from 17 to 38 cm. The cross section of these huts revealed a 35 to 40 cm deposit of charred material. The structures rest on the top of layer 3 and are sealed by layer 2.

#### Pottery

The present excavation at Chak 86 yielded a Painted Grey Ware ceramic assemblage. It

falls into eight major groups *viz.* red ware, red slipped ware, black on red ware, black and red ware, grey ware, Painted Grey Ware, black ware and other decorated ware. Each of these forms a diagnostic trait in the cultural assemblage of the period. The commonly met shapes of the red ware are vase, dish, bowl, storage-jar, basin etc. A few of them are also painted, mostly executed before firing. The colour scheme normally adopted is black on a red background. Among the motifs, mention may be made of horizontal lines, arches, chain motifs, rim bands etc. The other decorated wares include incised and appliqué variety of pottery. The decorations are found both on the interior and exterior of the vessels which consist of horizontal lines, diamonds, wavy lines, vertical lines, slashes, dots, concentric circles, mat pattern, etc. The black-and-red ware has a wholly individualistic appearance distinct alike in fabric and form. The shapes include mostly dishes and bowls.

The black ware is characterized by its medium fabric, being wheel made and fired at reduced condition; most of them are slipped and burnished. The characteristic shapes of this ware are very few indeed and include bowl and dish only. The grey ware forms a homogenous group belonging to a well-defined industry.

In case of Painted Grey Ware, the surface of the body is painted in black before firing. Instances of bichrome designs are also met with, i.e., black and brown and black and chocolate. The common pattern is represented by groups of vertical or oblique strokes below the horizontal rim-band. Other motifs include intersecting lines, dots,



dashes, wavy lines, concentric circles, sigma, radiating lines, spiral designs etc.

## Antiquities

The antiquities were made on stone, terracotta, bone, glass, shell and faience. The stone objects included pounder-cum-pestle, blade of chert and beads of carnelian, lapis lazuli, chert, agate and quartz; terracotta objects included animal figurines, sling balls, hopscotch, wheels, toy-cart frames, bangles, triangular cake and beads. The bone objects included awl, borer, point, arrowhead, stylus and bud-shaped socket. The other finds comprise beads of terracotta and semiprecious material, fragments of bangles made of faience, terracotta, glass, etc.

The foregoing discussions on the excavated finds suggest the following-

1. Both these sites exhibit a single phase of cultural deposits, i.e., Tarkhanewala-Dera by Mature Harappans and Chak 86 by PGW culture. Though these sites are located at a distance about 250 m from each other, they show no sign of reoccupation. The mature Harappan people of Tarkhanewala-Dera did not inhabit the areas later on occupied by the PGW people of Chak 86 nor did the later PGW people settled on the earlier habitation deposits of Tarkhanewala-Dera.

This is a common feature in this area along the River Sarasvati where the PGW culture did not overlap the Harappan. They existed independently. In stratigraphic context the excavated remains of Harappa and PGW display three types of relationship.

- (a) At sites like Bhagwanpura, Dadheri, Katpalon and Manda<sup>1</sup>, PGW is found interlocked with the Harappan depicting contemporaneity of both the cultures.
- (b) At sites like Ropar<sup>2</sup> PGW culture succeeded the Harappan but with a hiatus in between.
- (c) As observed in Sarasvati valley<sup>3</sup> like Tarkhanewala-Dera, Chak 86, Binjor I, II, III and IV, Chak-15/3 and 15/4, Chak 71, 74 and 75 etc. Harappan and PGW culture sites exist independently.

2. No iron is reported from the PGW level.
3. The appearance of glass in the PGW level denotes technological development from faience to glass.

<sup>14</sup>C Dates.- Eight samples were sent to the Institute of Physics, Bhubaneswar for analysis. From the Mature Harappan levels of Tarkhanewala-Dera, the <sup>14</sup>C dates do not fall within the established time bracket (2350-1750 BC) hence not mentioned here. The reason may be contamination or due to decomposition of collagen. On the other hand Chak 86 provided two dates viz., 650±130 BC and 215 ± 185 BC.<sup>4</sup>

<sup>1</sup> Jagatpati Joshi, Excavation at Bhagwanpura, 1975-76, *MASI*, No.89 (New Delhi, 1993), pp. 23-26.

<sup>2</sup> A.Ghosh, (ed.), *An Encyclopaedia of Indian Archaeology*, Vol. II (New Delhi, 1989), pp.377-79, 433

<sup>3</sup> *Ibid.*, Vol. I, pp.78,91.

<sup>4</sup> This is based on the analysis done by Dr. G.V.Ravi Prasad and Dr. Kaushika Dutta, AMS Radio Carbon Laboratory, Institute of Physics, Bhubaneswar as per their letter dated 31<sup>st</sup> January, 2007. See, Appendix A.

## Chronology of archeological samples from Tarkhanewala-Dera and Chak 86, Ganganagar District, Rajasthan

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### Introduction

To determine the chronology of the protohistoric settlements at Tarkhanewala-Dera and Chak 86 (29° 14'N, 73° 14'E), a number of charred bone and soil samples collected from both sites were dated by radiocarbon (<sup>14</sup>C) method. The usual procedure for <sup>14</sup>C analysis in bone samples involve separation of the collagen protein from the bone matrix after demineralizing the bone (removing the carbonate and apatite structure) and measuring <sup>14</sup>C in the purified collagen. Extraction of collagen is essential, since the inorganic carbonates of bones are often contaminated by post burial processes. However, in case of charred bones collagen extraction is not possible, as most of the collagen decomposes during combustion. All bone samples collected from the two sites were charred. Both the surface and the interior of the bones were carbonized. The samples were chemically pretreated as described below before their <sup>14</sup>C analysis.

### Methods

The bone samples were first cleaned of soil and other adhering objects by thoroughly scrapping the surface, and washing with de-ionized water. The samples were then dried and pulverized to 1-2 mm pieces. The crushed bones were then subjected to acid-alkali-acid

(AAA) treatment, to remove extraneous carbonates and humic material. The soil samples were thoroughly inspected for fragments of modern fine rootlets, which were hand-picked and removed. About 500 mg of soil samples were taken for AAA pretreatment. To obtain CO<sub>2</sub> for <sup>14</sup>C analysis, -150mg of pretreated bone and -400mg of pretreated soil samples were combusted with CuO and fine Ag wires in evacuated and sealed quartz tubes, and heated at 900°C for 2-3hrs. The CO<sub>2</sub> obtained by combustion of the samples were purified in a vacuum line, and converted into graphite by reducing with hydrogen (H<sub>2</sub>) gas in presence of iron (Fe) catalyst. The graphite samples thus formed were pressed into cathode targets for AMS <sup>14</sup>C analysis. <sup>14</sup>C measurements were done by accelerator mass spectrometry (AMS) method, using NEC 3MV 9SDH-2 pelletron accelerator at Institute of Physics, Bhubaneswar (Ravi Prasad *et al*, 2006). All <sup>14</sup>C ~ages were normalized with uniform δ<sup>13</sup>C of -25‰.

### Results

The <sup>14</sup>C results are given in Table IX. The <sup>14</sup>C -ages of the unknown samples were calibrated with OxCal3.10 calibration program (Bronik Ramsey, 2001), using INTCAL04 atmospheric <sup>14</sup>C data (Reimer *et al*, 2004). Both conventional <sup>14</sup>C -ages (BP) and calibrated ages (calendar BC/AD) are reported in Table 1 with ±1σ errors.



Table IX

Lab code	Sample	Stratum	Depth (cm)	Radiocarbon age	
				BP	Cal BC/AD
Tarkhanewala-Dera					
588	B/1/1 (bone)	4	-53	2,816 <sub>+79</sub>	900BC <sub>+100</sub>
625	XA1/1 (soil)	3	-48	2,520 <sub>+137</sub>	645BC <sub>+155</sub>
624	XA1/2 (bone)	1	-10	2,788 <sub>+274</sub>	1075BC <sub>+325</sub>
Chak 86					
629	A1/1 (soil)	4	-160	2,502 <sub>+82</sub>	650BC <sub>+130</sub>
626	A1/1 (bone)	4	-151	2,179 <sub>+157</sub>	215BC <sub>+185</sub>
627	A1/4 (bone)	1	-30	1,316 <sub>+84</sub>	720AD <sub>+90</sub>

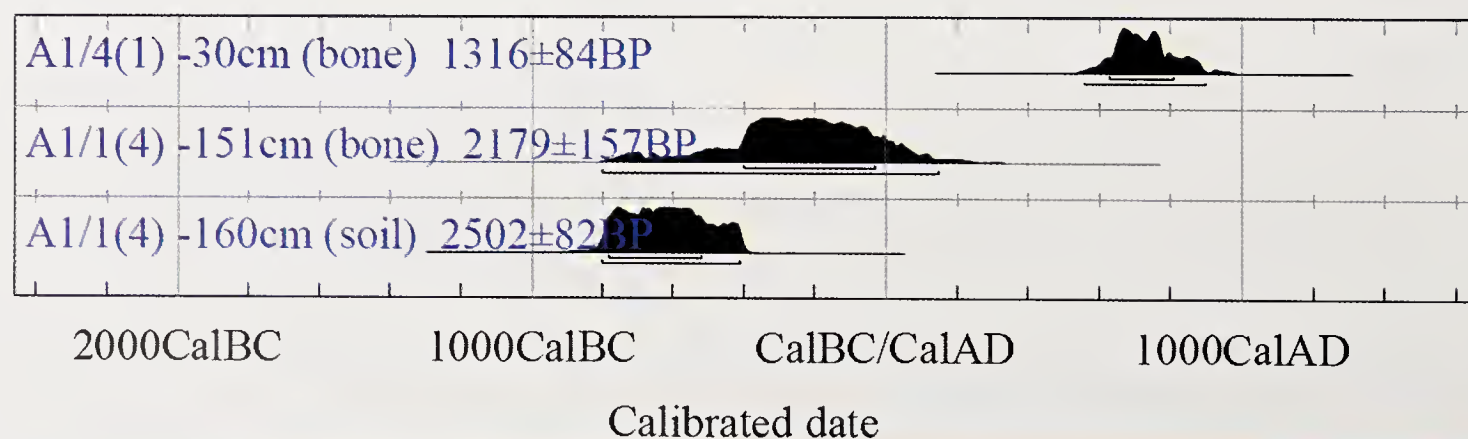
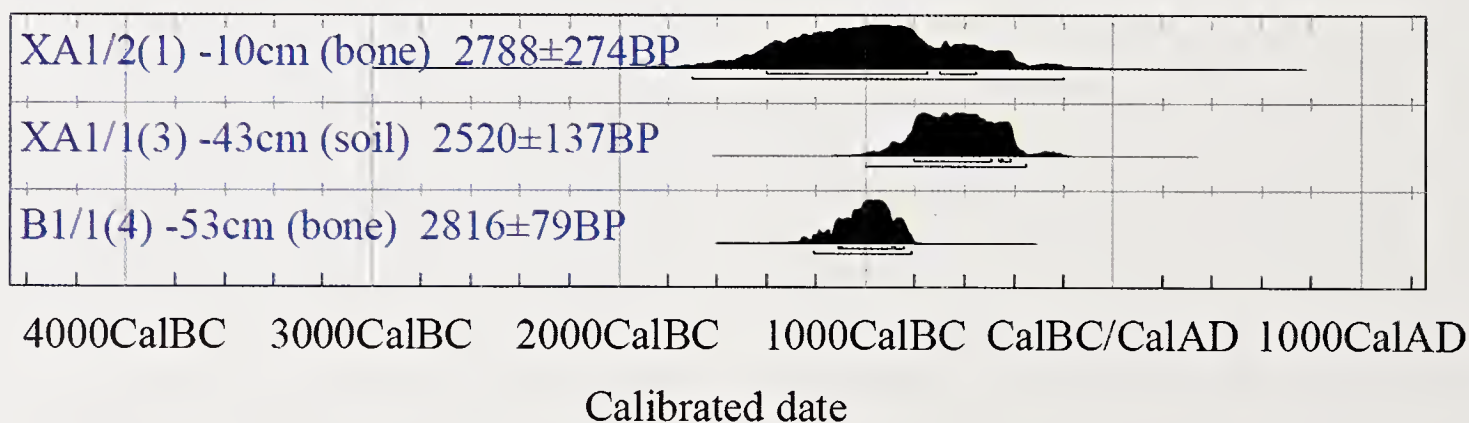
The detailed calibrated age ranges of the bone and soil samples are shown in Figs. 1 and 2. The  $^{14}\text{C}$ -dates fall broadly between 1100 BC to 200 BC, however, one bone sample from Chak 86 yielded much younger date, 720 $\pm$ 90 AD.

#### References

- (1) Ravi Prasad GV, Rajagopalan G, Choudhary RK, Gopalan K, Somayajulu BLK (2006), AMS

facility at Institute of Physics, Bhubaneswar Inter-laboratory comparison of results. *Current Science*, 90(4), 488 and 490.

- (2) PJ Reimer, MGI, Baillie, E Bard, et al. (2004), INTCAL04 Terrestrial radiocarbon age calibration, 0-26 cal kyr BP. *Radiocarbon*, **46**(3), 1029-1058.
- (3) Bronk Ramsey C (2001), Development of the Radiocarbon Program OxCal, *Radiocarbon*, **43**(2A) 355-363.



## A Report on the Animal bones from the Excavations at Tarkhanewala-Dera District Ganganagar, Rajasthan, 2003-2004

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Tarkhanewala-Dera is an ancient mound (Lat.29° 14'N; Long.73° 14' E) located in the dried bed of River Sarasvati in Anupgarh tehsil, District Sri Ganganagar of Bikaner division of Rajasthan. It was first excavated by Shri A. Ghosh of the ASI who brought to light the remains of a Mature Harappan site. The site was once again excavated by Shri P.K. Trivedi and his colleagues in 2003-2004. The excavation yielded residential structures with mud-bricks, terracotta sealings, beads, animal and human figurines, bangles, objects of stone, copper and bone. Along with typical Harappan ceramics, animal bones. were also revealed. This report deals with the analysis of mainly animal bones which were recovered from the excavations in 2003-2004. A total of ninety-four animal bone fragments were studied at the archaeozoology laboratory of the Deccan College, Pune. Bone samples from the following locus, stratum and depth were taken up for a detailed study.

- 1) XA1Qd2 layer 1, depth —23cm.
- 2) XA1Qd3 layer 3, depth 38cm to 42cm.
- 3) YC1Qd3 layer 1, depth 17cm to 19cm.
- 4) XD1Qd4 layer 2, depth 16cm to 18cm.
- 5) XA1Qd3 layer 1, depth 10cm.
- 6) XA1Qd2 layer2, depth 28cm to 30cm.
- 7) B1Qd3 layer 2, depth 41cm to 46cm.
- 8) XD1Qd4 layer 1, depth 4cm to 9 cm.

All the bone fragments were recorded, weighed and identified following standard procedures of faunal analysis. Each bone fragment was examined for cut and chop marks, modifications, chemical alteration, weathering, burning activity, discolouration, etc. Dimensional measurements were taken of all the measurable bones.

Bone identification was attempted to the species level by comparison with the reference skeletal collection of modern animals housed in the archaeozoology laboratory. The Schimdt's Atlas of Animal bones was also consulted while carrying out the species identification. Even though the bones are in a fragmented condition yet show fairly good preservation and could be easily identified

### Bone analysis

- 1) **Sample: 1**  
**Locus: B1Qd3**  
**Stratum: 2**  
**Depth: 41-46cm**  
**Bone identification:** A complete fused head of femur belonging to *Bos indicus* (Plate XCVI:2)
- 2) **Sample: 2**  
**Locus: XA1Qd2**  
**Stratum: 1**  
**Depth: 23cm**  
**Bone identification:** A complete astragalus of *Bos indicus* (Plate XCVI:1)



- 3) **Sample: 3**  
**Locus:** XA1Qd2  
**Stratum:** 1  
**Depth:** 23cm  
**Bone identification:** A lower basal portion of horizontal ramus of mandible of a small ruminant.
- 4) **Sample: 4**  
**Locus:** XA1Qd2  
**Stratum:** 1  
**Depth:** 23cm  
**Bone identification:** One fragment from shaft of metatarsal of domestic cow/buffalo (*Bos/Bubalus*).
- 5) **Sample: 5**  
**Locus:** XA1Qd2  
**Stratum:** 1  
**Depth:** 23cm  
**Bone identification:** One thoracic bifid spine of *Bos indicus* (Plate XCVI: 6).
- 6) **Sample: 6**  
**Locus:** XA1Qd2  
**Stratum:** 2  
**Depth:** 23-30cm  
**Bone identification:** Eight medium sized bone fragments unidentifiable.
- 7) **Sample: 7**  
**Locus:** XA1Qd2  
**Stratum:** 2  
**Depth:** 23-30cm  
**Bone identification:** One rib fragment of *Bos/Bubalus*.
- 8) **Sample: 8**  
**Locus:** XA1Qd2  
**Stratum:** 2  
**Depth:** 23-30cm  
**Bone identification:** A part of vertebrae of *Bos/Bubalus* with a cut mark.
- 9) **Sample: 9**  
**Locus:** XA1Qd2  
**Stratum:** 2  
**Depth:** 23-30cm  
**Bone identification:** A part of humerus shaft of *Bos/Bubalus* with a cut mark.
- 10) **Sample: 10**  
**Locus:** XD1Qd4  
**Stratum:** 1  
**Depth:** 4-9cm  
**Bone identification:** A part of centrum of vertebrae of *Bos/Bubalus* with slight charring (Plate XCVI: 5).
- 11) **Sample: 11**  
**Locus:** XD1Qd4  
**Stratum:** 1  
**Depth:** 4-9cm  
**Bone identification:** A part of centrum of vertebrae of *Bos/Bubalus* showing slight charring.
- 12) **Sample: 12**  
**Locus:** XD1Qd4  
**Stratum:** 1  
**Depth:** 4-9cm  
**Bone identification:** Proximal portion of metapodial of *Bos/Bubalus*.
- 13) **Sample: 13**  
**Locus:** XA1Qd3  
**Stratum:** 3  
**Depth:** 38-42cm.  
**Bone identification:** A fragment from mid shaft of humerus of *Bos indicus*.
- 14) **Sample: 14**  
**Locus:** XA1Qd3  
**Stratum:** 3  
**Depth:** 38-42cm  
**Bone identification:** A part of spine of vertebra of *Bos indicus*.

15) Sample: 15

Locus: XA1Qd3

Stratum: 3

Depth: 38-42cm

**Bone identification:** A fragment of a turtle carapace belonging to *Trionyx gangetecus* sp (Plate XCVII: 2).

16) Sample: 16

Locus: YC1Qd3

Stratum: 1

Depth: 17-19cm

**Bone identification:** A fragment of a plastron of turtle belonging to *Trionyx gangetecus* sp (Plate XCVII: 1).

17) Sample: 17

Locus: XD1Qd4

Stratum: 2

Depth: 16-18cm

**Bone identification:** One small spine of a freshwater fish species which is tentatively identified as cat fish.

18) Sample: 18

Locus: XD1Qd4

Stratum: 2

Depth: 16-18cm

**Bone identification:** One long bone fragment from femur of a very young sheep/goat (*Ovis/Capra*).

19) Sample: 19

Locus: XD1Qd4

Stratum: 2

Depth: 16-18cm

**Bone identification:** Eight rib fragments of very young sheep/goat (*Ovis/Capra*).

20) Sample: 20

Locus: XD1Qd4

Stratum: 2

Depth: 16-18cm

**Bone identification:** One dental fragment of *Bos indicus*.

21) Sample: 21

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** One complete second phalanx of *Capra hircus*.

22) Sample: 22

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** Proximal part of metapodial of *Bos indicus* (Plate XCVI: 3).

23) Sample: 23

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** One fragment from shaft of metacarpal of *Bos indicus* (Plate XCVI: 3).

24) Sample: 24

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** One fragment of a vertebrae of *Bos indicus*.

25) Sample: 25

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** One fragment of a centrotarsal of *Bos indicus*.

26) Sample: 26

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** One fragment of trochlea from distal portion of metapodial of *Capra hircus*.



27) Sample: 27

Locus: B1Qd1

Stratum: 4

Depth: 50-53 cm

**Bone identification:** One shaft fragment from humerus of *Bos indicus*.

28) Sample: 28

Locus: B1Qd1

Stratum: 4

Depth: 50-53 cm

**Bone identification:** A complete astragalus of *Bos indicus*.

29) Sample: 29

Locus: B1Qd1

Stratum: 4

Depth: 50-53 cm

**Bone identification:** A distal portion of metacarpal of *Ovis aries* with fused trochlea having a width of 23.20 mm (Plate XCVII: 3).

30) Sample: 30

Locus: B1Qd1

Stratum: 4

Depth: 50-53 cm

**Bone identification:** One complete axis vertebra of *Capra hircus* (Plate XCVII: 4).

31) Sample: 31

Locus: B1Qd1

Stratum: 4

Depth: 50-53 cm

**Bone identification:** Proximal portion of metatarsal of *Capra hircus* having a width of 21.15mm (Plate XCVII: 3).

32) Sample: 32

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** Two carpals of *Bos indicus*.

33) Sample: 33

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** Twelve longbone fragments of *Bos indicus* (Plate XCVI: 4).

34) Sample: 34

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** Thirty three medium sized unidentifiable fragments of which three are charred.

35) Sample: 35

Locus: XA1Qd3

Stratum: 1

Depth: 10cm

**Bone identification:** Two dental fragments of *Bos/Bubalus*

Results

The following animals were identified at Tarkhanewala-Dera (Table X) mammals (6), birds (0), reptile (1), fish (1). In the collection very few wild animals are represented.

The entire collection is dominated by the bones of cattle mostly the domestic cow *Bos indicus*. Some of the cattle bones because of their fragmentary nature and absence of skeletal markers could not be identified specifically as cow or buffalo. Hence these are collectively grouped under *Bos/Bubalus*. Almost all body parts like humerus, femur, metapodials, vertebrae, ribs, astragalus, are represented. However a limited representation of teeth in the bone assemblage is observed. Many of the bones have traces of charring and

cut marks on them suggesting butchering and meat processing activity associated with dietary use. One bifid thoracic spine is present in the collection. This is a characteristic skeletal feature which is found only in the humped cattle Zebu hence its presence is noted with certainty at the site.

A few bones fall in the size range of sheep, goat and deer but again due to their fragmented nature could not also be separated species wise. Hence were collectively grouped as small ruminants. Among these some could be further grouped under sheep/goat category. Presence of bones of a young goat with cut marks indicates its use in the food economy.

Among wild fauna, a general absence of both herbivores like deer, antelopes and carnivores along with smaller mammals is observed. The reptile group of animals is represented by shell fragments of turtle species (*Trionyx gangeteus*). Presence of these indicates the additional exploitation of aquatic animal resources for food purposes at the site. Occurrence of a fish spine provides further evidence for this particular aspect.

## List of Figures from Tarkhanewala-Dera

### Plate XCVI

1. A complete astragalus of *Bos indicus*
2. A complete femur head of *Bos indicus*
3. Left fragment from shaft of metacarpal of *Bos indicus*  
Right proximal portion of metapodial of *Bos indicus*
4. Long bone fragments of *Bos/Bubalus sp.*
5. Left centrum of *Bos/Bubalus sp.*  
Right proximal portion of radius of *Bos/Bubalus sp.*
6. One thoracic bifid spine of *Bos indicus*

### Plate XCVII.

1. Plastron from shell of turtle *Trionyx gangetecus*
2. Turtle Carapace of *Trionyx gangetecus*
3. Left Proximal portion of metatarsal of *Capra hircus*  
Right A distal portion of metacarpal of *Ovis aries* with fused Trochlea.
4. One complete axis vertebra of *Capra hircus*.

**Table X: List of Animals identified at Tarkhanewala-Dera**

No:	Species
1	<i>Bos indicus</i> (domestic cow/ox)
2	<i>Bos/Bubalus</i> (domestic cow/ox/buffalo)
3	<i>Capra hircus</i> (goat)
4	<i>Capra/Ovis</i> (goat/sheep)
5	<i>Ovis aries</i> (sheep)
6	Small ruminant
7	<i>Trionyx gangetecus</i> (Turtle)
8	Fish species unidentified





1



2



3



4



5

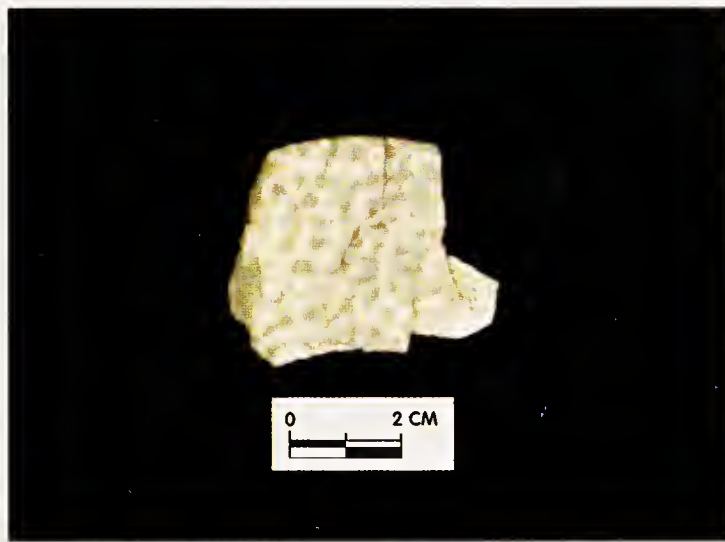


6

Pl. XCVI : Tarkhanewala-Dera : Animal bones. See pp. 243,244,245,246,247



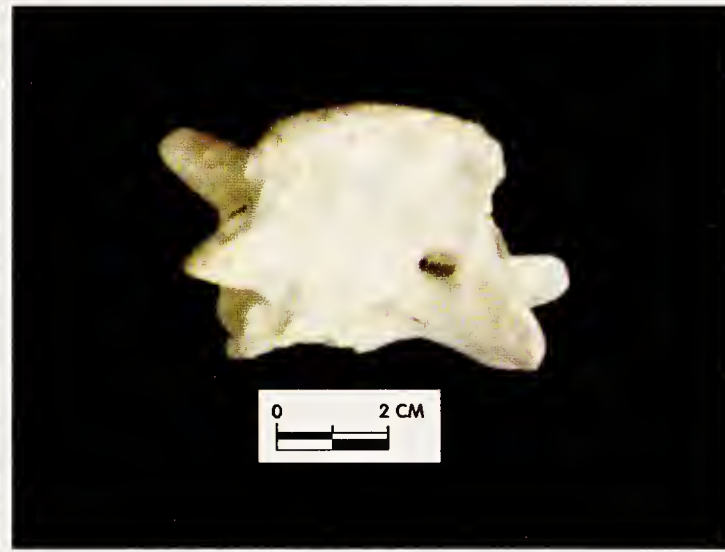
1



2



3



4

Pl. XCVII : Tarkhanewala-Dera : Animal bones. See pp. 245,246,247



**A Report on the Animal bones from Chak 86, District Ganganagar, Rajasthan,  
(2003-2004).**

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Chak 86 is another ancient mound located close to Tarkhanewala-Dera (Lat.29° 15' N; Long.73° 14' E) in the dried bed of River Sarasvati in Anupgarh tehsil, District Ganganagar of Bikaner division of Rajasthan. It was previously excavated by Shri A. Ghosh of the ASI who brought to light the remains of a PGW culture. Recent excavations at this site by Shri P.K. Trivedi and his colleagues in 2003-2004 also revealed cultural remains belonging to this particular period. Antiquities such as terracotta objects, beads, objects of bone, shell and stone were recovered along with pottery and animal bones. In this report results of the analysis carried out on the animal remains from Chak 86 are presented.

A total of sixty-four animal bones were studied at the archaeozoology laboratory of the Deccan college, Pune following similar procedure of faunal analysis as was done for bones from Tarkhanewala-Dera. Bone identification showed that the entire assemblage is dominated by bones of cattle mostly of the domestic cow/ox (*Bos indicus*). These are represented by fragments of the vertebrae, long bones, teeth, astragalus and phalanges. All these show traces of butchering activity for food purpose in the form of charring and cut marks. The domestic goat (*Capra hircus*) is represented by a few teeth, ribs, vertebrae, calcaneum and long bones. Fragmented condition of these bones also suggests the use of sheep/goat in the

food economy. Occurrence of a second phalanx of the domestic ass (*Equus asinus*) indicates its presence at the settlement and probable use as a beast of burden. A negligible representation of wild animals is observed. From the fused nature of some of the bones, it is inferred that mostly adult sized animals were present in the collection.

**1) Sample: 1**

**Locus: ZA1Qd2**

**Stratum: 2**

**Depth: 33-40cm**

**Bone identification:** A complete calcaneum of *Capra hircus* having a length of 57.66mm (Plate XCIX: 2).

**2) Sample: 2**

**Locus: ZA1Qd2**

**Stratum: 2**

**Depth: 33-40cm**

**Bone identification:** An isolated first phalanx of *Bos indicus* whose proximal portion is broken.

**3) Sample: 3**

**Locus: ZA1Qd2**

**Stratum: 2**

**Depth: 33-40cm**

**Bone identification:** One carpal of *Bos/Bubalus* quite large with traces of charring (Plate XCVIII: 3).

- 4) Sample: 4  
Locus: ZA1Qd2  
Stratum: 2  
Depth: 33-40cm  
**Bone identification:** One vertebral fragment of *Bos/Bubalus* with slight traces of charring (Plate XCVIII: 1).
- 5) Sample: 5  
Locus: ZA1Qd2  
Stratum: 2  
Depth: 33-40cm  
**Bone identification:** Distal portion of metapodial of *Bos/Bubalus* with a part of the trochlea attached.
- 6) Sample: 6  
Locus: ZA1Qd2  
Stratum: 2  
Depth: 33-40cm  
**Bone identification:** One unidentified long bone fragment of cattle.
- 7) Sample: 7  
Locus: ZA1Qd2  
Stratum: 2  
Depth: 33-40cm  
**Bone identification:** A part of centrum of lumbar vertebra belonging to a small ruminant.
- 8) Sample: 8  
Locus: ZA1Qd3  
Stratum: 2  
Depth: 30-50cm  
**Bone identification:** A partially broken astragalus of *Bos indicus* with charring.
- 9) Sample: 9  
Locus: ZA1Qd3  
Stratum: 2  
Depth: 30-50cm  
**Bone identification:** Distal portion of metacarpal with a just fused trochlea of *Bos/Bubalus* (Plate XCVIII: 4).
- 10) Sample: 10  
Locus: A1Qd1  
Stratum: 4  
Depth: 35-51cm  
**Bone identification:** A complete first phalanx of *Bos indicus* with traces of charring on it (Plate XCVIII: 6).
- 11) Sample: 11  
Locus: A1Qd1  
Stratum: 4  
Depth: 35-51cm  
**Bone identification:** A broken head of a femur of *Bos/Bubalus*.
- 12) Sample: 12  
Locus: A1Qd1  
Stratum: 4  
Depth: 35-51cm  
**Bone identification:** Portion of pelvis with pubis of *Bos/Bubalus*.
- 13) Sample: 13  
Locus: A1Qd1  
Stratum: 4  
Depth: 35-51cm  
**Bone identification:** An unfused distal portion of radius of a young *Bos/Bubalus*.
- 14) Sample: 14  
Locus: A1Qd1  
Stratum: 4  
Depth: 35-51cm  
**Bone identification:** One dental fragment of *Bos/Bubalus*.
- 15) Sample: 15  
Locus: A1Qd1  
Stratum: 4  
Depth: 51-60 cm  
**Bone identification:** A part of centrum and transverse processes of vertebra of *Bos/Bubalus*.



- 16) Sample: 16  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 51-60cm  
**Bone identification:** A vertically broken astragalus of *Bos/Bubalus* with traces of charring on its sides (Plate XCVIII: 5).
- 17) Sample: 17  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 51-60cm  
**Bone identification:** Distal portion of metacarpal with fused trochlea of *Bos/Bubalus*.
- 18) Sample not numbered  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 51-60cm  
**Bone identification:** Nine medium sized long bone fragments of *Bos/Bubalus*.
- 19) Sample: 18  
 Locus: A1Qd3  
 Stratum: 1  
 Depth: 36-38 cm  
**Bone identification:** Portion of pelvis with a part of the ischium and acetabulum of *Bos indicus*. The fragment has a cutmark (Plate XCVIII: 2).
- 20) Sample not numbered \*  
 Locus: A1Qd3  
 Stratum: 1  
 Depth: 36-38 cm  
**Bone identification:** Nine flat bone fragments unidentified.
- 21) Sample: 19  
 Locus: ZA1Qd1  
 Stratum: 2  
 Depth: 10-44 cm  
**Bone identification:** One complete second phalanx of *Bos indicus* (Plate XCVIII: 6).
- 22) Sample: 20  
 Locus: ZA1Qd1  
 Stratum: 2  
 Depth: 10-44 cm  
**Bone identification:** A part of axis vertebrae of *Bos indicus* (Plate XCVIII:1).
- 23) Sample: 21  
 Locus: ZA1Qd1  
 Stratum: 2  
 Depth: 10-44 cm  
**Bone identification:** One broken first phalanx of *Bos indicus*.
- 24) Sample: 22  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 1.22 m to 1.35 m  
**Bone identification:** A complete second phalanx of *Equus asinus* (Plate XCIX: 3).
- 25) Sample: 23  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 1.22 m to 1.35 m  
**Bone identification:** An isolated second phalanx of *Bos indicus*. with its distal end broken.
- 26) Sample: 24  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 1.22 m to 1.35 m  
**Bone identification:** Partially broken astragalus of *Bos indicus* (Plate XCVIII: 5).
- 27) Sample: 25  
 Locus: A1Qd1  
 Stratum: 4  
 Depth: 1.22 m to 1.35 m  
**Bone identification:** One broken and completely charred astragalus of *Bos indicus* (Plate XCVIII: 5).

28) Sample: 26

Locus: A1Qd1

Stratum: 4

Depth: 1.22 m to 1.35 m

**Bone identification:** Distal portion of metatarsal of *Bos/Bubalus* with slight traces of charring.

29) Sample: 27

Locus: A1Qd1

Stratum: 4

Depth: 37 to 50cm

**Bone identification:** Complete astragalus of *Bos indicus*.

30) Sample: 28

Locus: A1Qd1

Stratum: 4

Depth: 37 to 50cm

**Bone identification:** Petrous temporal of *Bos indicus*.

31) Sample

Locus: A1Qd1

Stratum: 4

Depth: 37 to 50cm

**Bone identification:** Five unidentified medium sized fragments.

32) Sample: 29

Locus: A1Qd1

Stratum: 2

Depth: 42-to 52cm

**Bone identification:** One complete astragalus of *Bos indicus*.

33) Sample: 30

Locus: A1Qd1

Stratum: 2

Depth: 42 to 52cm

**Bone identification:** One complete second phalanx of *Bos indicus* (Plate XCVIII: 6).

34) Sample: 31

Locus: A1Qd1

Stratum: 2

Depth: 42 to 52cm

**Bone identification:** Complete first/second mandibular molar tooth of *Capra hircus* (Plate XCIX: 1).

35) Sample: 32

Locus: ZA1Qd3

Stratum: 2

Depth: 50 to 56 cm

**Bone identification:** Isolated first/second mandibular molar tooth of *Capra hircus* (Plate XCIX: 1).

36) Sample not numbered\*

Locus: ZA1Qd3

Stratum: 2

Depth: 50 to 56 cm

**Bone identification:** Six unidentified fragments.

37) Sample: 33

Locus: A1Qd1

Stratum: 4

Depth: 1.22 m to 1.35 m

**Bone identification:** Portion of a pelvis with ischium of *Bos indicus*.

38) Sample: 34

Locus: ZA1Qd1

Stratum: 2

Depth: 10 to 44 cm

**Bone identification:** One caudal vertebra of *Bos/Bubalus*.

39) Sample: 35

Locus: ZA1Qd1

Stratum 2

Depth: 10 to 44 cm

**Bone identification:** Parts of trochlea of metapodial of *Bos/Bubalus*.



**List of Figures from Chak 86 (2003-2004)**

**Plate XCVIII:**

1. Left fragment of axis vertebrae of *Bos indicus*  
Right fragment of vertebrae of *Bos indicus*
2. Portion of pelvis with acetabulum of *Bos indicus*
3. Carpal of *Bos/Bubalus sp.*
4. Two distal portions of trochlea of *Bos/Bubalus*
5. Broken astragalus of *Bos/Bubalus* with cut marks and charring
6. Left complete first phalanx of *Bos indicus* showing charring  
Middle complete second phalanx of *Bos indicus*  
Right complete second phalanx of *Bos indicus*

**Plate XCIX:**

1. Molar teeth of *Capra hircus*
2. Complete calcaneum of *Capra hircus*
3. Complete second phalanx of *Equus asinus*

**Acknowledgements**

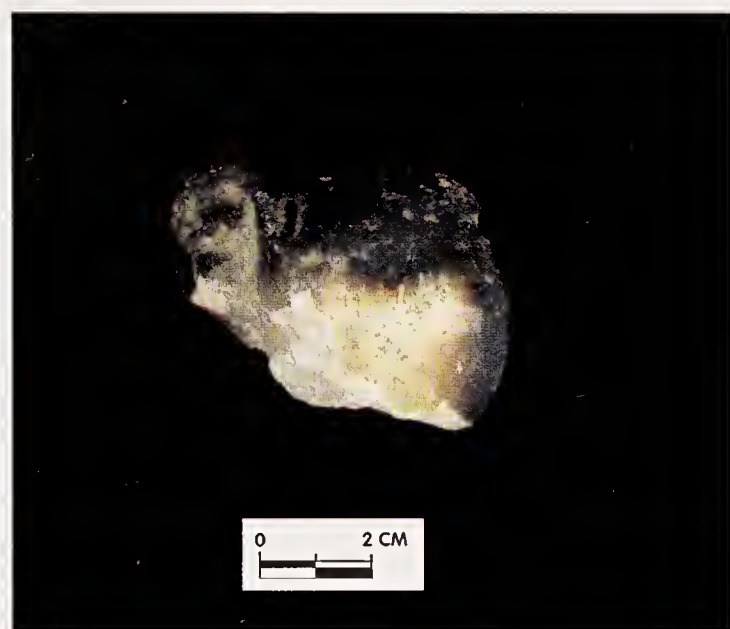
I wish to thank Shri P.K.Trivedi, Superintending Archaeologist, ASI for inviting me to study the animal bones from both Tarkhanewala-Dera and Chak 86. The Deccan College, Pune is duly acknowledged for providing the necessary facilities for carrying out the analysis. Lastly, would also like to thank Shri Milan Chauley for his help and kind cooperation in initiating this particular study.



1



2



3



4



5



6

Pl. XCVIII : Chak 86 : Animal bones. See pp. 250,251,252,253,254





1



2



3

*Pl. XCLIX : Chak 86 : Animal bones. See pp. 250,252,253,254*

















